Dental Digest

April 1957

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Vol. 63, No. 4

Dental Digest

Registered in U.S. Patent Office

APRIL 1957

About Our CONTRIBUTORS

EDWIN ROSENSTIEL, L.D.S. (Victoria University of Manchester, England, 1946) is Senior Lecturer, Kings College Hospital Dental School, University of London. His special interests are crown and bridge techniques and he has to his credit a variety of published articles. Doctor Rosentiel's last appearance in DIGEST was in September, 1951. His current article is an illustrated description of a new kind of visual aid for teaching tooth morphology, TRANSPARENT MODEL TEETH WITH PULPS.

NEWTON E. ALLEN, D.D.S. (Atlanta-Southern Dental College, 1933) is at present stationed at the 4450th USAF Hospital, Langley AFB, Virginia with the rank of Lieutenant Colonel. Doctor Allen tells us that his father, brother, and uncle are dentists, and that he limits his personal practice to oral surgery. He is well represented in dental literature with many published articles. For his first presentation in DIGEST Doctor Allen's title is SUTURE INSTRUMENT.

MILTON GOLDSTEIN, D.D.S. (The Thomas W. Evans Institute, University of Pennsylvania, 1934) will be remembered for his previous DIGEST articles, the most recent being his illustrated report on the uses of MEPHATE® in the dental office. In the current issue Doctor Goldstein presents REDUCTION OF RADIATION.

COYL B. THOMAS, D.D.S. (St. Louis University, School of Dentistry,1929) is engaged in the practice of general dentistry. Doctor Thomas presents the second of three articles to appear under the general title, MULTIPLE INLAYS: CROWNS AND BRIDGES.

JAMES J. MACMILLAN, D.D.S. (University of Pennsylvania, School of Dentistry, 1927) is a general practitioner. He has been a lecturer on dental subjects and has published several articles. Doctor Macmillan's present article, ADDITIONAL OBSERVATIONS ON SUGAR CONTROL IN CHILDREN'S DIETS, brings up to date the information presented in his DIGEST article in April, 1955.

HAROLD S. JONES, D.D.S. (University of Pennsylvania Dental School, 1918) is engaged in general dentistry. Doctor Jones has published in ORAL HYGIENE. His first article to appear in DIGEST is REBASING OR RELINING DENTURES in the current issue.

EDWARD J. RYAN, B.S., D.D.S., Editor
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TRANSPARENT MODEL TEETH

with Pulps

EDWIN ROSENSTIEL, L.D.S., London

DIGEST

The models illustrated in this article are reproductions of human teeth made in a transparent polyester resin. A cast of the pulp made of a similar but colored resin can be seen inside the model, the whole model being a copy of the original tooth and showing the exact relationship between pulp and tooth. Such visual aids should be extremely valuable in the teaching of detailed tooth morphology and later as study aids in advanced operative dentistry and endodontia. This illustrated article describes in detail the novel technique developed at King's College Hospital Dental School, London, England for making such models.[1]

[1]Rosenstiel, E.: A New Teaching Aid for Operative Dentistry, Dent. Record **74**:245 (Sept.) 1954.

Description of Technique

The outstanding feature of the technique is the use of clear methyl methacrylate resin as an "investment." The resulting methyl methacrylate mold is then filled with clear polyester resin which flows around the pulp casts in the center of the mold. When set, the methyl methacrylate "investment" can be readily removed by dissolving in toluene. This reagent will not affect polyester resins. The final model only requires some finishing and polishing.

Preliminary Steps in Procedure—1. Use fresh, *unfixed* teeth only. Open

1. *Upper central incisor. (Wide pulp chamber, lateral canal.)* **2.** *Upper bicuspid.*

3. ***Lower bicuspid. (Bifurcated root.)***

4. ***Upper molar. (Divided mesiobuccal root canal.)***

into the pulp chamber of the tooth through the side.

2. Immerse in papain solution, apply a vacuum (28-29 inches mercury) for a short time. Release the vacuum and incubate for one week.

3. Wash the remains of the pulp out of the root canals with a stream of water. Discard teeth which are blocked.

4. Dry inside with compressed air, follow with one hour in incubator. Then immerse in silicone fluid, apply a vacuum for several hours and leave immersed for two days. Dry the inside of the tooth with compressed air and expel the remaining traces of oil in a centrifugal casting machine, or, if available, in a high speed centrifuge.

Steps in Second Phase of Procedure—1. A number of teeth are placed in a stainless steel crucible and placed under a vacuum. The teeth are then covered (under the vacuum) with colored polyester resin and the vacuum is released.

2. For the best results the crucible is transferred to an Atkinson's Pressure Chamber[2] and the resin is allowed to set under 100 pounds per square inch air pressure at room temperature.

3. Sample of resin is kept and the pressure is released on setting. The teeth are removed from the surrounding resin when this is almost solid.

4. To render the dentine completely soluble in hydrochloric acid, the teeth are now treated in a pressure cooker for 3 hours at 15 pounds pressure.

Steps in Third Phase of Procedure—1. The tooth is embedded in a slushy mix of "transparent" acrylic powder and monomer, contained in a tray made from perspex sheet. A small area of tooth is exposed.

2. The tray is placed into an Atkinson's Pressure Chamber and, in a horizontal position, is cured for twelve to fifteen hours at 65 degrees Centigrade (149. Fahrenheit).

3. A counter-cast in plaster is made to complete the mold.

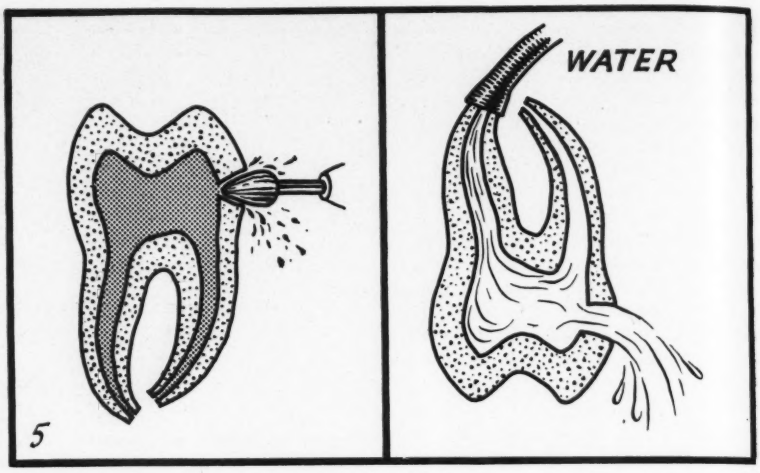
Preparation for Casting—1. All tooth substance is dissolved in hydro chloric acid (50 per cent) under a vacuum for about a week. The acid is changed daily.

2. The completed mold is washed and allowed to dry in an incubator and is then ready for casting.

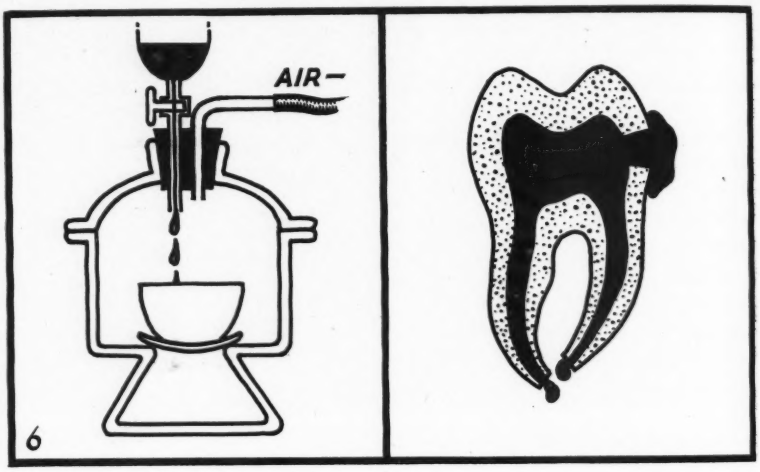
Final Steps—1. The mold is filled with colorless polyester resin and closed. (The plaster top is coated with an alginate separating medium.) When set, the resin is matured for one hour at 60 degrees Centigrade.

[2]Atkinson, H. F.: Details of a Method for Processing Methyl Methacrylate Under Air Pressure, Australian J. Dent. **58**:74 (April) 1954.

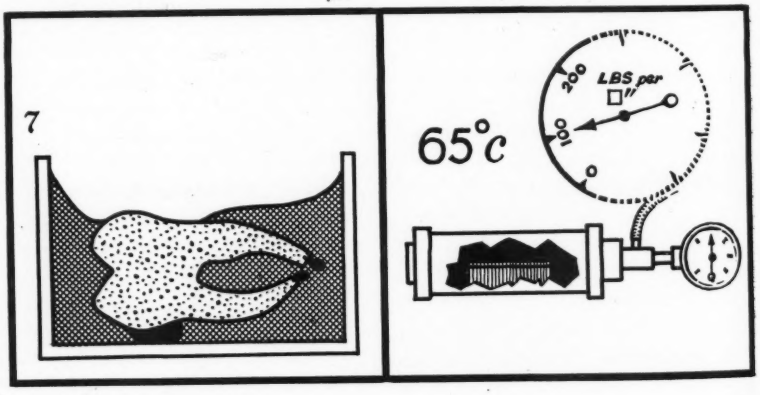
5. *(A) Use fresh, unfixed teeth only. Open into the pulp chamber through the side. (B) Immerse in papain solution, apply a vacuum (28-29 inches Mercury) for a short time, release the vacuum and incubate for one week. (C) Wash the remains of the pulp out of the root canals with a stream of water. Discard teeth which are blocked. (D) Dry inside with compressed air followed by one hour in an incubator. Immerse in silicone fluid, apply a vacuum for some hours, and leave immersed for two days. Dry inside with compressed air and expel the remaining traces of oil in a centrifugal casting machine, or if available, in a high speed centrifuge.*



6. *(A) A number of teeth are placed in a stainless steel crucible and placed under a vacuum. The teeth are then covered (under the vacuum) with colored polyester resin and the vacuum is released. (B) For the best results the crucible is transferred to an Atkinson's Pressure Chamber and the resin left to set under 100 pounds per square inch air pressure at room temperature.*



7. *(A) The tooth is embedded in a slushy acrylic mix of "transparent" powder and monomer, contained in a tray made from perspex sheet. A small area of the tooth is exposed. (B) The tray is placed in an Atkinson's Pressure Chamber and, in a horizontal position, is cured for 12 to 15 hours at 65° Centigrade (149.° Fahrenheit). (C) A counter-cast in plaster is made to complete the mold.*



2. The resin separates from the methyl methacrylate "investment" when immersed in toluene.

3. Finish and polish.

4. Red sprue indicating the original opening into the pulp chamber is drilled out. The space is filled with nonsetting polyester resin and sealed on the outside with the same mixture as used in Step 1.

Materials Used

1. Papain digesting solution: Papain, commercial, 1 gram, is triturated with a small amount of water dispersed in an aqueous solution of the following ingredients and is finally made up to 50 cubic centimeters:

Sodium bicarbonate ..... 1 gram
1-cysteine hydrochloride ..... 0.2 gram

2. Silicone fluid, known as MS. 550, which is distributed by Hopkins and Williams, London, England.

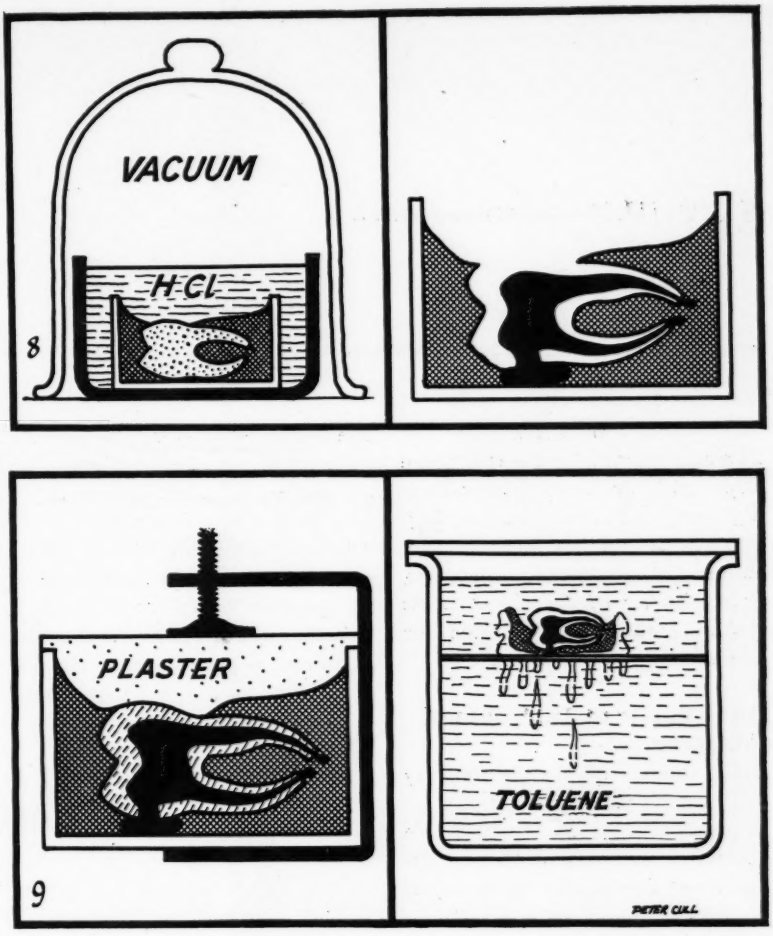
3. Polyester resin which can be obtained from Scott Bader and Company, London, W. C. 2, England. The colored resin is composed of the following:

Marco Resin S. B. 26 C ..... 10 grams
Monomer C (Styrene co-polymer) ..... 0.5 gram
Catalyst Paste H. (1-hydroxy cyclohexyl hydroperoxide-1 in an inert filler. ..... 0.4 gram
Crystic Pigment Red, B. 214 ..... 0.5 gram

These ingredients are thoroughly

8. *(A) All tooth substance is dissolved in hydrochloric acid (50 per cent) under a vacuum for about a week. The acid is changed daily. (B) The completed mold is washed and allowed to dry in an incubator and is then ready for casting.*

9. *(A) The mold is filled with colorless polyester resin and closed. (The plaster top is coated with an alginate separating medium.) When set, the resin is matured for one hour at 60° Centigrade (140°. Fahrenheit). (B) The resin separates from the methylmethacrylate "investment" when immersed in toluene. (C) Finish and polish. (D) Red sprue indicating the original opening into the pulp chamber is drilled out. The space is filled with nonsetting polyester resin and sealed on the outside with the same mixture as under (A).*



mixed and freed from air under a vacuum. The mixture should be used within 24 hours. Immediately before use, 0.04 gram Accelerator E (cobalt naphthenate solution) is added.

4. Colorless polyester resin:

Marco resin S. B. 26C	33 grams
Monomer C	13 grams
Catalyst paste H	1.3 grams
Accelerator E	0.5 to 1 gram

University of London King's College Hospital Dental School.

Author's Note: A collection of some seventy models has been entered at the Twelfth International Dental Congress of the International Dental Federation to be held in Rome from 7 to 14 September, 1957.

Onset of Cancer of the Parotid Gland

In 100 patients with tumors of the parotid gland reported by Ariel,[1] the average age at the time of diagnosis was 45.2 years. A history often reveals a slowly growing, painless mass which may be located in the vicinity of either ear. Patients with benign tumors uniformly present an asymptomatic mass. In addition to the mass, patients with carcinoma may complain of pain, dysphagia, facial nerve paralysis, or cervical tumor. Any tumor of long duration may be a carcinoma. Tumors metastasize slowly, and are most often located at the angle of the jaw, usually directly in front of the lobe. On physical examination a smooth, ovoid, firm mass, usually freely movable may be discovered. Moreover, the size of the tumor does not differentiate a benign lesion from a lesion that is malignant. Biopsy specimens should be obtained and when possible, all parotid tumors should be promptly removed.

From *The Cancer Bulletin* **8**:73 (*July-August*) 1956.

[1]Ariel, I. M.: Treatment of Tumors of the Parotid Salivary Gland, GP **13**:92 (April) 1956.

SUTURE *Instrument*

NEWTON E. ALLEN, D.D.S., Selma, Alabama

DIGEST

The placement of sutures in loose flaps with ordinary methods is difficult and time consuming. The result is often improper location of the sutures and tearing or stretching of the tissue. This article presents a technique for overcoming these difficulties.

Dual Purpose Instrument Constructed

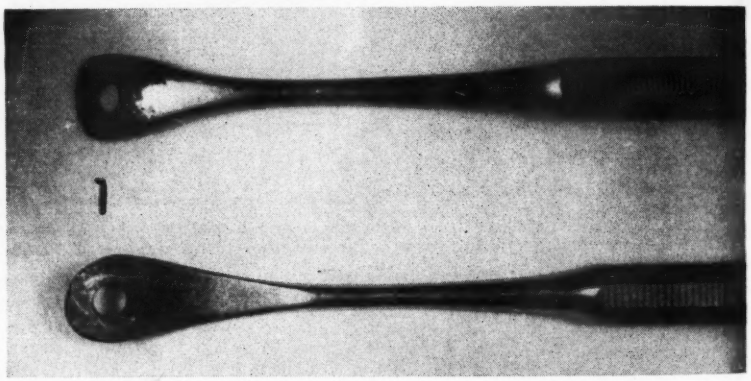
A retractor or periosteal elevator may be converted into a dual purpose instrument (Fig. 1) by boring a hole approximately 3 millimeters in diameter near the tip of the working end. The instrument may still be used for its original purpose, and may also be used as a suture instrument to stabilize the flap as a suture needle is passed through. Almost any retractor or periosteal elevator suitable to the operation may be used.

Method of Use—1. The blade of the instrument is placed against the side of the flap opposite the point of insertion of the needle, with the hole over the site where the needle should emerge.

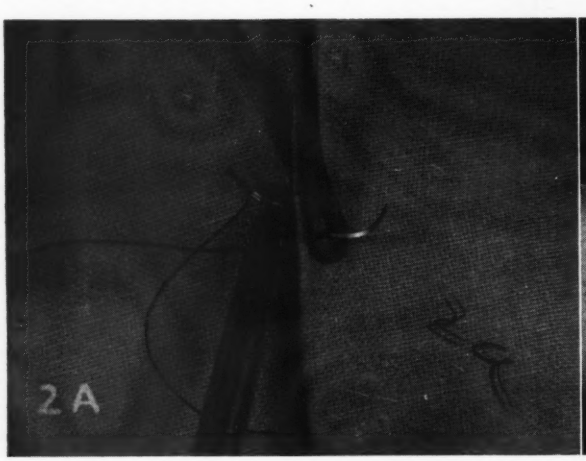
2. Either the convex or the concave surface of the instrument, depending upon the location of the flap, is selected (Fig. 2).

3. The instrument is held in place until enough of the needle appears through the hole to be grasped with the needle holder.

4. The instrument is removed before the suture is pulled through. This

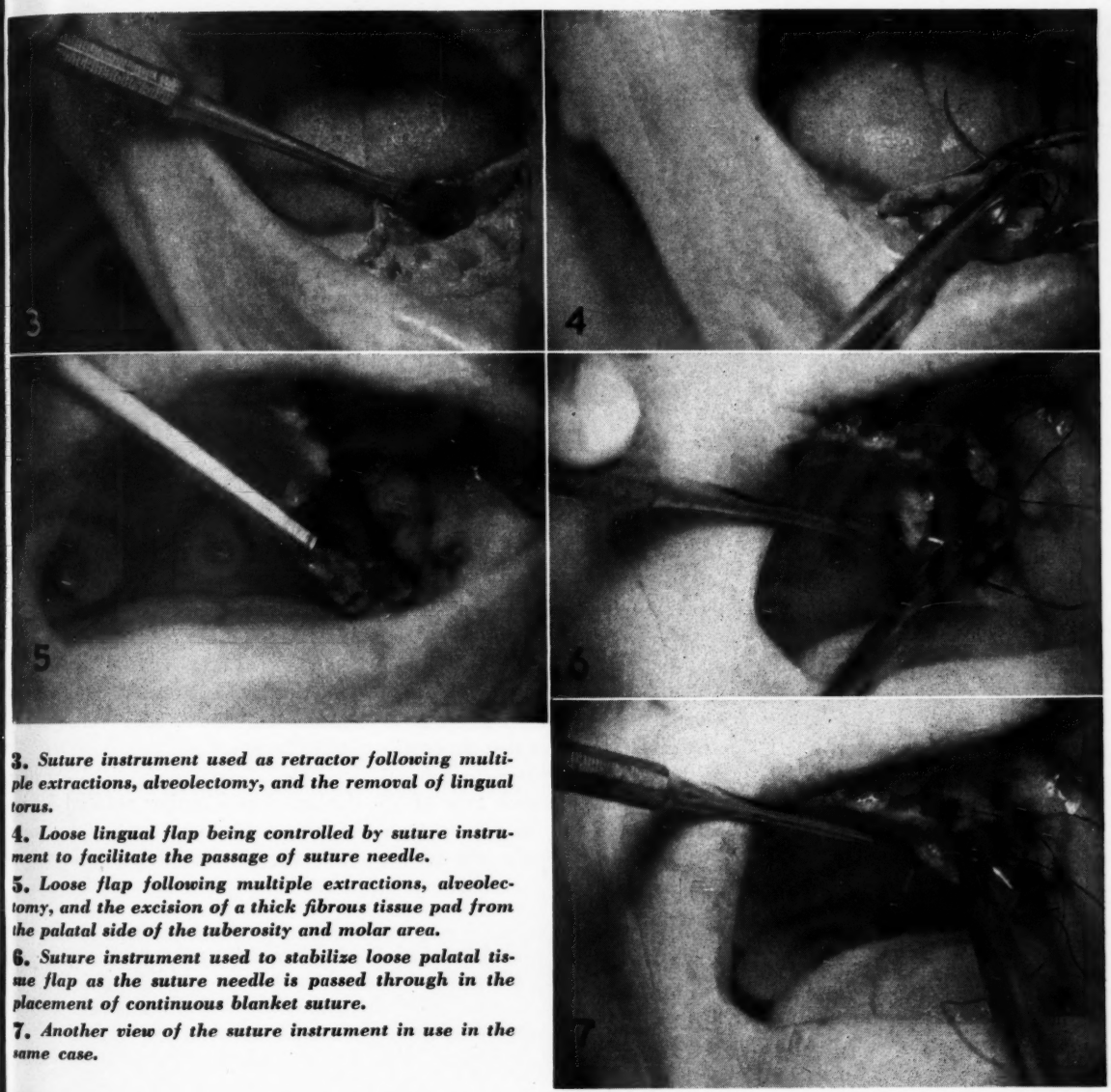


1. ***A dual purpose instrument that was made by boring a hole 3 millimeters in diameter near the tip of the working blade of a tissue retractor is shown. It may be used to stabilize loose flaps to facilitate the insertion of suture needles and may still be used as a retractor.***



2A. ***The use of the suture instrument is demonstrated on cloth.***

2B. ***The instrument is shown as it is used to control a loose flap of palatal tissue that was elevated during an operation that consisted of the extraction of teeth, an alveolectomy, and the enucleation of an incisive canal cyst.***



3. *Suture instrument used as retractor following multiple extractions, alveolectomy, and the removal of lingual torus.*

4. *Loose lingual flap being controlled by suture instrument to facilitate the passage of suture needle.*

5. *Loose flap following multiple extractions, alveolectomy, and the excision of a thick fibrous tissue pad from the palatal side of the tuberosity and molar area.*

6. *Suture instrument used to stabilize loose palatal tisme flap as the suture needle is passed through in the placement of continuous blanket suture.*

7. *Another view of the suture instrument in use in the same case.*

maneuver produces little trauma and facilitates accurate placement of sutures.

Advantages

As a retractor is already in the hand of the operator throughout most surgical procedures within the oral cavity, a dual purpose instrument of this type conserves the time that would be lost by returning the retractor to the tray and selecting another instrument to be used for flap stabilization.

Application

Tissue flaps that particularly need to be held steady while inserting a suture needle include the flaps created by operations for (1) the removal of palatal and lingual tori, (2) impacted maxillary cuspids, (3) incisive canal cysts, and (4) for the excision of fibrous tissue from the maxillary tuberosity region and alveoloplasties.

Summary

A technique is described for the construction and use of suture instrument to assist in the placement of sutures in loose flaps of tissue. The technique conserves time, reduces trauma, and results in better placement of sutures.

DuBose Building

REDUCTION *of* RADIATION

in the Dental Office

MILTON GOLDSTEIN, D.D.S., Newark, New Jersey

DIGEST

Because of the widespread use of radiation a considerable contribution can be made to patient safety and that of the operator by the elimination of unused primary radiation and by minimizing unnecessary secondary radiation in routine dental radiography. The results of tests made on several types of machines and the procedure employed to correct the disadvantages are outlined in this article.

Test of X-ray Machines

Four types of dental x-ray machines were tested. Exposure time was one-half second at 65 kilovolts and 10 milliamperes. Eight by 10-inch Cassette-mounted test plates were exposed at an 8-inch target-film distance.

Results of Tests

The primary beams were found to vary from a sharp 4-inch diameter to an irregular 8½-inch plus diameter. In each case there was a penumbra of scatter radiation which usually filled the entire film area. Figure 1 illustrates the result obtained with a popular apparatus.

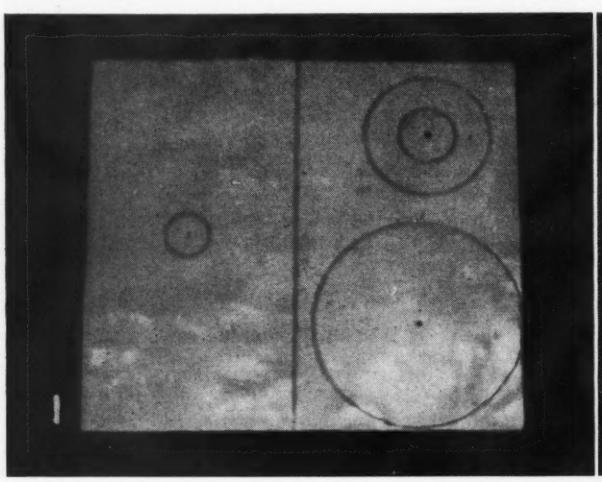
Corrections

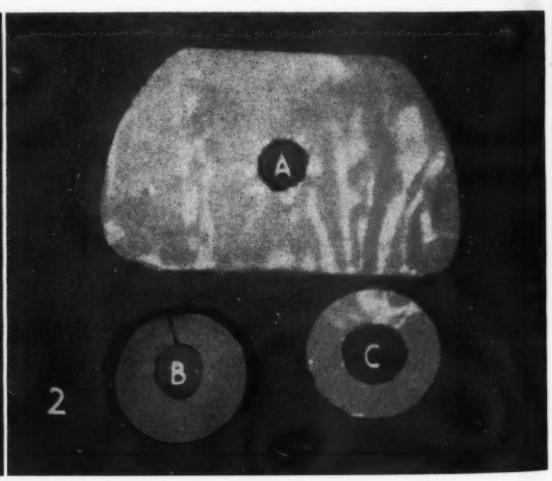
It should be noted that dimensions are necessarily approximate and must be determined for each type of apparatus because of the variety of design of the components of x-ray machines.

Control of Radiation—Passage of x-radiation outside the circumference of the cone was controlled by placing a 1/16-inch lead mask on the inner surface of the face-plate of the x-ray machine head. An aperture approximately 1 inch smaller than the cone diameter was cut in the center of the mask.

Beam Diameter Limited—A cone-shaped mask was fitted into the cone, the pointed end of the mask being truncated about an inch from the end to limit the beam diameter, at the normal 8-inch target film distance, to 2½ inches. A piece of 1-millimeter aluminum filters out "soft" x-ray wave lengths.

Third Lead Mask Used—Scatter radiation was further reduced by inserting a third lead mask with a suitable aperture inside the base of the cone.



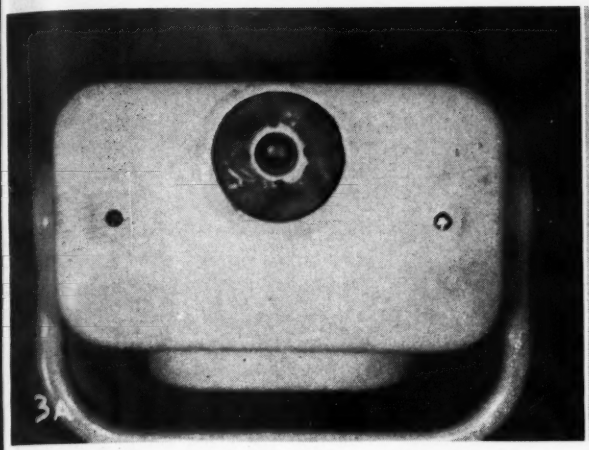


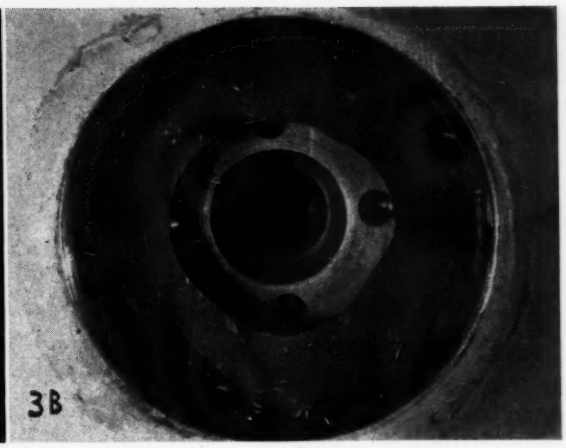
1. ***The 1/16-inch lead sheet scribed for cutting out the three masks is shown. The dimensions for one x-ray machine are shown and are a guide to approximating the measurements for other machines. The variations in cone diameter, target-cone-tip distance, and the design of the face-plate will necessitate changes.***

2. ***The three patterns are cut out. The aperture in the face-plate mask "A" is approximately 1 inch but may, if centering is accurate, be made smaller.***

The cone "B" is formed by cutting out a radial segment (pie-shaped) from the large circle of lead and bending the remainder into the cone shape. The end of the cone is truncated to make an aperture of approximately 1 inch which determines the beam diameter at the level of the intraoral film, at about 2½ inches. This mask is fitted inside the conventional cone.

The mask "C" has an aperture of approximately 1½ inches but this may also be reduced if centering is accurate.



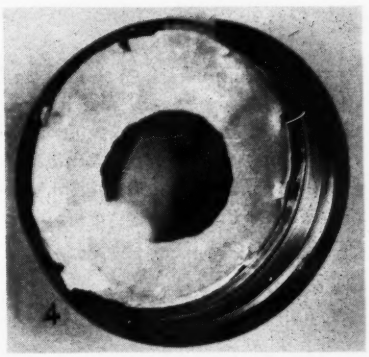


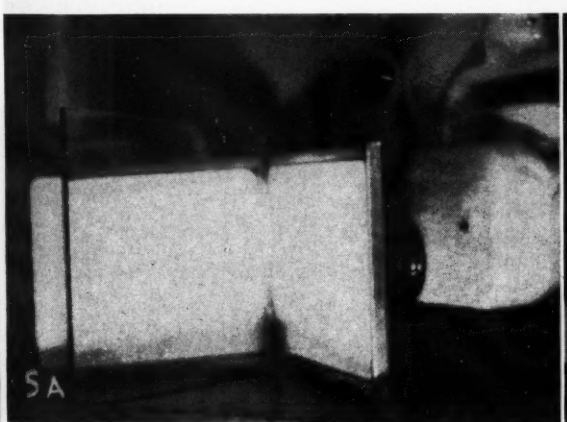
To Avoid Cone Cut-off—A beam 2½ inches in diameter is adequate in relation to intraoral film size, but requires some added care in aiming to avoid cone cut-off. Aiming at the center of the film minimizes this hazard.

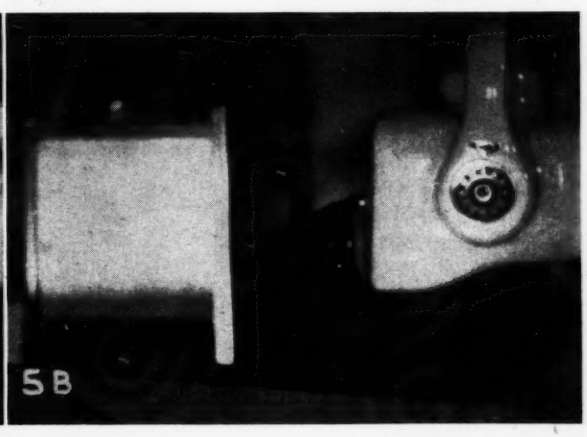
Diagnostic Value Unimpaired—The improved x-ray beam is illustrated in Figure 2. The superimposed radiograph indicates the size relationships and an example of cone cut-off which does not seriously detract from the diagnostic value of the radiograph.

3. ***Mask "A" is shown cemented to the inner side of the face-plate of the x-ray machine. Radiation is now confined to this smaller aperture and no radiation can emerge from beyond the base of the cone by either direct or secondary radiation.***

4. ***The truncated cone "B" and the intermediate mask "C" are shown in position in the conventional cone. They are held in place by Mortite, sticky wax or Duco cement.***







5. ***The method is shown for testing the beam size before and after masking by the use of an open cassette and a mirror. The tip of the cone is 1 inch from the center of the cassette at right angles to it. The mirror is set at about 45 degrees to the intensifying screen. The room is dark, of course.***

The operator stands behind the tube and observes the mirrored reflection of the beam on the screen at 1 second exposures. The tests may also be made on film exposed for 1/2 second.

Advantages of Corrections

1. Radiation exposure of the dental patient is reduced more than 60 per cent which lessens the patient's total radiation exposure.

2. The operator is in a safer environment because of the reduction of scatter radiation.

3. Radiographs are clearer and sharper because of the more centralized primary beam and the reduction of secondary radiation generated within the structures of the x-ray machine head and in the cone itself.

4. An indirect advantage derives from the fact that the operator is obliged to exercise greater care in aiming. A positioning device such as the Ortholator overcomes this difficulty, however.

One Johnson Avenue

Multiple INLAYS, CROWNS, *and* BRIDGES–

Part Two

COYLE B. THOMAS, D.D.S., Lebanon, Missouri

DIGEST

In this article which is the second in a series of three, the author presents a step-by-step technique for reconstructing a broken down tooth to which was clasped a partial denture. The steps in the technique are illustrated.

Reconstructing a Tooth Supporting a Clasp

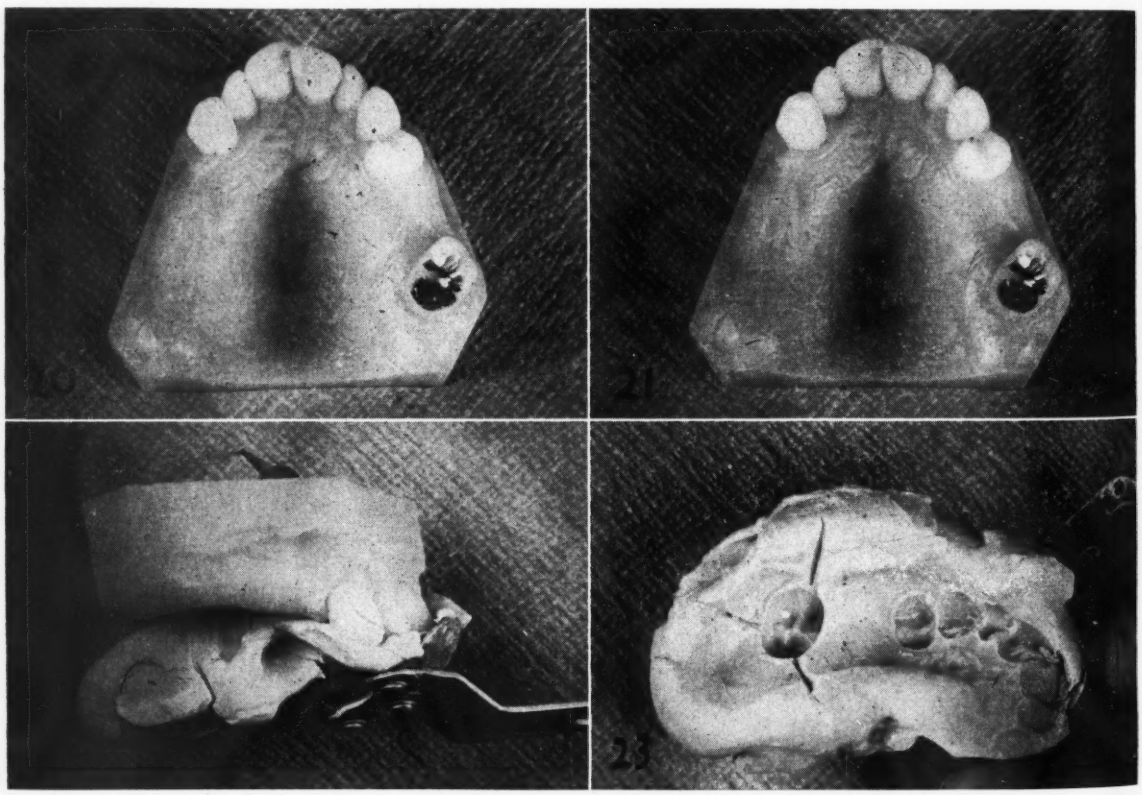
A patient presented with a broken down tooth which had been supporting a clasp for a partial denture. To extract the tooth would destroy the usefulness of the partial denture. The problem was to reconstruct the tooth so that the clasp would continue to fit.

Technique Employed

The following steps were taken in the reconstruction of the tooth:

1. A model of the mouth with the broken tooth in this case is shown in Figure 20. Wax the missing portion of the tooth in the mouth (Fig. 21).

2. Take an impression of the tooth



20. *Model of mouth showing broken tooth.*
21. *Model showing broken portion of tooth restored with wax as it would appear in the mouth.*
22. *Method of taking impression of the tooth in the mouth with alginate including the teeth and the ridge anterior and posterior to tooth.*
23. *Impression showing area included in impression and waste channels leading from impression of tooth.*

including a considerable area posterior to the tooth and including a number of teeth adjacent to the tooth anteriorly (Fig. 22). After removing the impression, prepare sluiceways leading from the single tooth impression (Fig. 23). Place this in a wet napkin or in a jar containing a damp sponge and cover the jar. Alginate is the material used.

3. The tooth in the mouth is prepared to receive a cast gold crown. An impression is made, poured, and the cast is separated from the impression (Fig. 24).

4. A small amount of casting wax is melted and poured into the impression of the single tooth that is to be restored (Fig. 25).

5. Place the cast into the impression for a few moments to allow the wax to cool and again separate from the impression (Fig. 26). This will leave the abutment waxed up to conform to the shape of the tooth before the abutment was prepared (Fig. 27).

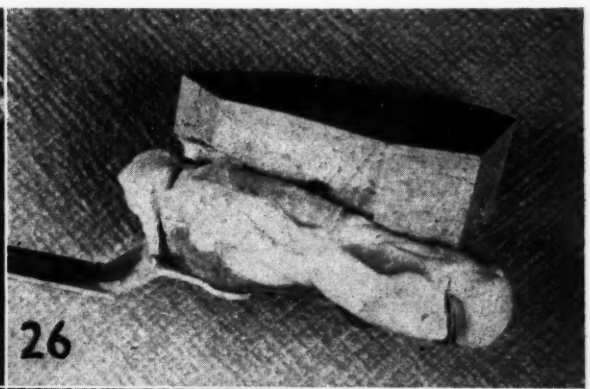
24. *Cast of mouth with the tooth prepared to receive full cast gold crown.*

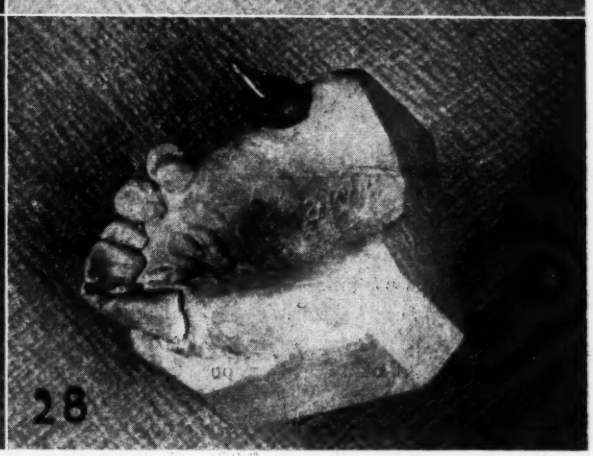
6. The wax pattern may be sprued with a staple sprue prepared from a paper clip (Fig. 28).

7. Remove the wax pattern from the cast of the prepared abutment (Fig. 29). Invest and cast (Figs. 30, 31, and 32).

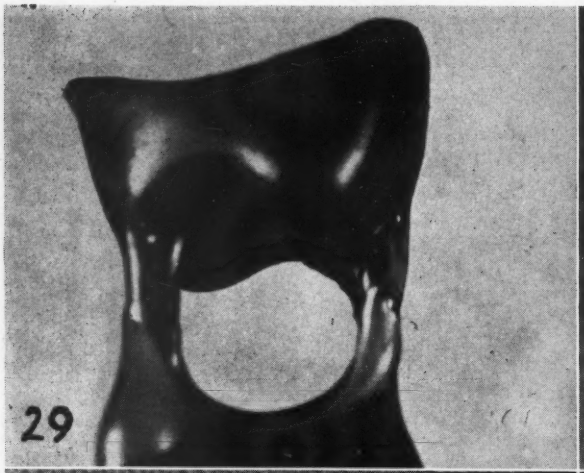
Comment

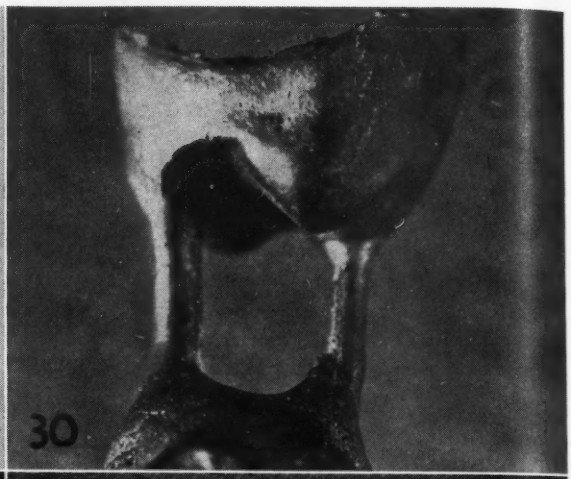
In order to cast smooth, accurately fitting inlays and crowns, use hygro-

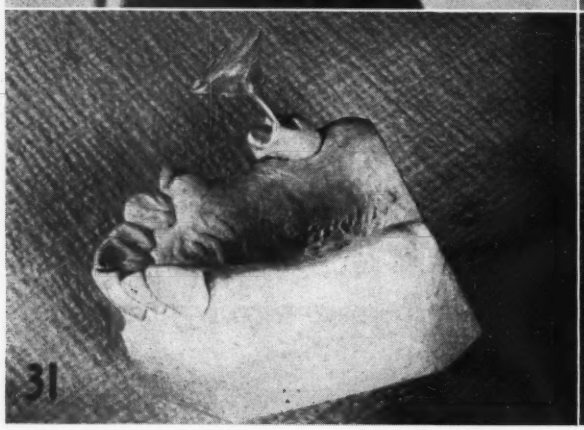


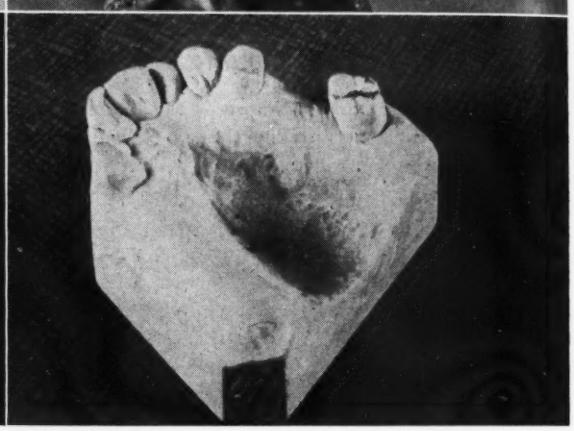


25. *Melted wax poured into the impression of the tooth.*
26. *Cast placed in the impression.*
27. *Cast with the impression removed showing wax on the abutment.*
28. *Cast with wax flange removed and sprue attached.*









29. *Wax pattern, close up.*
30. *Cast crown.*
31. *Crown on the preparation, sprue attached.*
32. *Crown with sprue removed; compare with Figure* 21. *Tooth waxed in mouth.*

scopic investing with low heat burnout.

To produce castings with few bubbles, use vacuum investment technique.

Hygroscopic and vacuum investing techniques will be discussed in another article next month.

125 A *West Commercial*

Fatalities Following Topical Application of Local Anesthetics

FATALITIES and untoward reactions occur more frequently when local anesthetics are used topically than when they are administered by other routes. Rapid absorption has been presumed as the cause, but data in support of this contention have not been available. Studies of blood levels of tetracaine indicate that this occurs and at a more rapid rate than has been supposed.

A quantity of drug that results in no detectable blood level when infiltrated subcutaneously gives levels when applied topically that are equal to one-third to one-half of those after intravenous injection.

The untoward responses are due to the rapid passage of the drug from the site of application into the systemic circulation. The absorption from mucous membrane is far more rapid than clinicians have realized and simulates intravenous administration. Study of the fatalities that have occurred indicates that the cause of death is overdosage from rapid absorption.

From *Journal of the American Medical Association* **162**:17 (December) 1956.

Additional Observations on SUGAR CONTROL *in Children's Diets*

JAMES J. MACMILLAN, D.D.S., Carbondale, Pennsylvania

DIGEST

In a previous article[1] were reported tooth condition, personality characteristics, and other observations made on seven children of various ages from five families who had never at any time been given any candy or soft drink.

Three years have passed since the first study was made. The oldest child, then nine years of age, is now twelve and the youngest child, then three, is now six.

At the time of the previous study (1) no caries had occurred in the deciduous teeth of the children reported, and (2) one cavity of minor enamel with no dentine penetration had occurred in a permanent tooth of the child aged nine. This article reports the present dental conditions of the first group of children and presents the additional information gained from continued observation of the group which includes innumerable other cases successfully treated by the same procedure.

Present Dental Conditions Reported

At the time of the present writing (1) no caries has appeared in the deciduous teeth of the group of children reported, but (2) a second minor pit cavity has appeared and been restored in the mouth of the child now aged twelve, and (3) a cavity of minor importance has appeared and been restored in a permanent tooth of a child now aged nine.

Relative Effectiveness of Two Dietary Procedures—The previous study discussed the relative effectiveness of two different methods used in advising parents concerning dietary procedure in the feeding of their children:

1. The first method, used by the author for twenty-five years, included the advice "sugar in moderation." In twenty-five years this method produced no results worth mentioning.

2. The second method, used for the succeeding ten years and still in use, omitted the phrase "sugar in moderation" and advised that children, when they attained the proper age, be fed the food the family eats, but at no time be allowed any candy or soft drink. This method produced deciduous teeth without caries in all of the children and has up to this time produced permanent teeth with only three minor defects.

Observation Modified

In the previous paper under the heading, "Cultivation of Food Habits," the following opinion was expressed: "Observation over a long period of time has raised considerable doubt as to whether or not a child's first taste of candy and soft drink is pleasing. The author is inclined to the belief that these tastes are not pleasing at first."

Substitution of Words—In consideration of numerous additional observations made in many more cases than were included in the first study, if the author were to rephrase the statement quoted, he would use the words "sweets" rather than "candy and soft drink."

Reasons for Change of Opinion—The following discussion presents a few of the many reasons for the author's change to the generalization "sweets" rather than only "candy and soft drink."

The Mechanism of Taste

Exclusive of its mechanical and anatomic function, it is believed that at birth the mechanism of taste is so adjusted that it contains no liking or taste for sweets. It is also believed that if that adjustment of the taste mechanism is not tampered with and destroyed by the giving of an excessive and unnecessary amount of sweets to infants and young children, as the child grows older the adjustment will become more firmly set and he will develop no taste or desire for sweets.

Taste for Sweets Cultivated—Extensive study indicates that in the majority of cases the natural function of the mechanism of taste present at birth is permanently destroyed in the first year, probably in the first months of life, by the giving to a baby an unwanted, unneeded, and unnecessary amount of sweets.

Candy and Soft Drink Chief Offenders—The writer believes that the agents most probably causing the destruction of the taste mechanism are candy and soft drink.

The Control of Caries

Progress in the prevention, control, and eradication of a disease requires specific knowledge of (1) the causative agent of the disease, (2) the antidote to use against the causative agent, and (3) the ability and means to administer the antidote.

Cause of Caries Known—The causative agent of caries is known; namely, a bacterial organism. No agent has as yet been discovered which will

[1]MacMillan, James J.: Sugar Control in Children's Diets, DENTAL DIGEST 61:170 (April) 1955.

render that organism powerless to act destructively on tooth structure or which will eradicate the organism. In view of the extensive research conducted for many years in efforts to find an antidote for this organism, it would seem that such a discovery will never be made.

Control of Bacterial Organism Possible—The behavior of the organism, however, has been found to be such that if it can be controlled by keeping it low in numbers, little if any carious action will begin, and if such an action has begun, it can be arrested or greatly retarded.

Sugar the Cause of Increase in Bacteria — It is commonly admitted that the factors which cause the bacterial organism responsible for caries to increase in numbers in human saliva are in the carbohydrate food and liquid classification. It is also well known and many times proved that the factor in this classification which is most likely to cause an increase in numbers of this organism is sugar.

Caries not Successfully Controlled —Despite this knowledge which has been in existence for a considerable length of time, the fact remains that caries at the present time is far from being under control.

Results of Change in Dietary Procedure

When, after a period of twenty-five years, the author changed the dietary advice given to parents and those concerned in the feeding and care of infants and young children from the plan of Method 1 to that of Method 2, it was not expected that there would be any other result than a decrease in the amount of caries in the cases involved.

In the intervening years from that time to the present, however, the author's ideas as to just what has taken place since the change from Method 1 to Method 2 was made have greatly changed.

Incidence of Caries Absent—In the first years after the change in procedures, in the few cases under observation, it gradually became noticeable that no caries was occurring; some time later parents began to report that their children did not seem to care for sweets; as the children became older it was evident that they were becoming proud of their teeth.

Attention Enjoyed — The children exhibited no reluctance to being referred to as not eating candy and drinking soft drink, but on the contrary seemed to enjoy the attention they attracted, at parties, for example, by refusing to partake of these items. As other children were included in the treatment plan, the same method was followed.

Less Dental Treatment Required— It became evident that these children did not need the services of a dentist at the time of losing the deciduous teeth. The children toyed with the loose teeth and removed them themselves, or had them removed by a parent. An exception to this situation is that if the incoming tooth is not in correct alinement, the deciduous tooth over it may have to be removed by a dentist.

Parent Cooperation Gained — As time passed and it became apparent that these children were following similar taste and diet patterns, it was also evident that their parents were tracing patterns which were similar. It was noted that the parents were keeping a wary eye on sugar, to the extent, for instance, that while allowing in-between meal eating, such items as bread spread with jam or sugar were never allowed.

General Results Satisfactory — In the parental diet patterns it has been found that while all have obeyed the "no candy soft drink" edict, some have been more lenient in sugar allowances than others, but the results up to the present time from a dental and general health standpoint have been excellent.

Significant Development

As a result of the treatment procedure recorded another development has eventually emerged from this study. This development may be subject to qualifications later but at present there is the possibility that a definite or nearly definite prescription has been formulated which designates the proper amount of sugar to be allowed in a child's diet which will assure sound and in most cases teeth without caries.

That a permissible allowance of sugar will be automatically determined if infants and young children are never given any candy and soft drink thereby not creating and developing a taste for sweets in their preschool years seems evident.

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REBASING *or* RELINING DENTURES

HAROLD S. JONES, D.D.S., Allentown, Pennsylvania

DIGEST

The fact that many different techniques and procedures have been used to rebase or reline a denture is evidence that little success and often failure are the results of this procedure. In a successfully rebased or relined denture it is commonly understood that the denture must be perfectly reproduced after the impression has been taken. The difficulties in attaining this aim have resulted in disappointment and have tended to make rebasing or relining techniques unpopular. This article is a step-by-step presentation of a relining technique using self-curing plastic material that can be completed in about an hour's time. The author reports that the successful results with the use of this procedure are highly encouraging.

General Considerations On Rebasing

A cross section of the denture showing the position of the rebasing material while it is still in the soft plastic stage is shown in Figure 1.

Control of Material Impossible—The usual position of the denture in relationship to the upper jaw is shown in Figure 2. It is virtually impossible to govern completely the exact position of the rebase material after the denture has been inserted in the mouth. The material will flow in the line of least resistance because of the limitations of positions and manipulations.

Excess Material Cause of Failure—The position of the plastic rebase material when the denture has been inserted in the mouth for the first time is shown in Figure 3. Note that the material has filled the labial and buccal flanges and the excess has to some extent been forced over and onto the palatal areas. It is this excess which causes the denture to be displaced in the palatal area that is one of the causes of failure in rebasing the denture.

Possible Cause of Increase in Vertical Height—It is also demonstrated in Figure 3 that the palatal area is not fully covered. The postdam area is therefore lacking in material and not in contact with the tissue which will create a problem. The unnecessary addition on the palatal area is also the possible cause of an increase in vertical height and sometimes it affects the anterior position of the denture in relation to perfect occlusion in the finished case.

Effects of Pressure—The rebase material occupies space in the denture and because of the general shape of a denture (cup shaped) and the problem of insertion, the rebase material will not flow exactly in the direction desired. Considerable pressure, therefore, is present at the time the impression is taken. This pressure causes displacement of the tissues which equals displacement of the denture.

Additional Pressure — The combined forces of displacement, greatly increased by the fact that not only is an impression being taken but the denture must be placed in proper occlusion cause additional pressure.

Ideal Impression—This is achieved with a tray that allows a free flow of the impression material and permits as little pressure as possible during the procedure. In the rebasing technique where the denture is used as the tray these considerations are not observed because the denture to be rebased has a precision fit and causes pressure, not allowing free flow.

Technique

To prevent the failure due to pressure in rebasing dentures it is suggested that holes be put in the labial and/or buccal flanges before the impression is taken.

Preliminary Steps—1. Check the occlusion of the denture for stability.

2. Note the patient's ability to close in perfect occlusion.

Preparations—1. Clean the denture with soap and water. Do not use any chemical solvent that may affect the plastic denture.

2. Examine for irregular areas in the denture base as illustrated in Figure 4. If these are present they should be reduced to the general level of the inside of the denture.

3. Overextensions are reduced but not to excess. The soft rebase consistency of the plastic material will not stay in place long enough to secure a proper muscle trim unless there is sufficient tray or denture flanges to support the position of the material.

Procedural Steps—1. Make the holes in the labial and/or buccal flanges. Irregular or thin section are ideal places to insert the large round bur and produce the holes. In Figure 6 the position of the holes can be noted. The larger the denture, usually the larger the holes, but care must be taken not to make them too large and not to include the periphery. Individual judgment must be used concerning the number of holes neces-

sary and their sizes. Too many or holes too large would allow a too free flow and would not permit guiding the direction of the material.

2. Bevel all holes on the inner side of the denture as illustrated in Figure 5. This acts as an extra vent and guides the material in the proper direction.

3. The excess material that exudes through the holes should come in contact with a clean surface of the denture, one not contaminated with wax or oil. At the proper time these holes will be closed up or buttoned. An excess of plastic material in contact with plastic teeth interferes with the refinishing of the denture.

4. With porcelain teeth considerable time will be saved by coating the teeth and other areas with wax, but care must be taken in the waxing procedure not to infringe on the circumference of the holes. The area around the holes must be clear.

5. Select the plastic material to be used. The kind that will completely polymerize to hardness in twenty minutes is preferred. Gauge the proper amount.

6. After the liquid and powder has been thoroughly stirred, the top of the jar should be replaced to allow as little evaporation as possible. Allow time for chemical action to take place in the entire mass. At least a minute will be required.

7. Apply the mixture in the denture with a spatula, pressing it on the labial and/or buccal side, but not on the palatal area. If the material is too soft and runs out of the holes, return it to the jar, wait another minute and then apply it again. The consistency or tackiness of the material should be noted at this time for this is an important factor later in the procedure.

8. Irritation of the patient's tissue from the chemical content of the material must be avoided. The material must not be of such sticky consistency that when the denture is hurriedly removed from the mouth some of the material clings to the tissue. After it is filled with the fresh mixture, the denture is immersed in cold water. After this immersion (about a minute) the tackiness or the sticky quality of the mix can be determined by touching the mixture in the denture with a dry finger. If the material sticks to the finger, return it to the cold water for a short time.

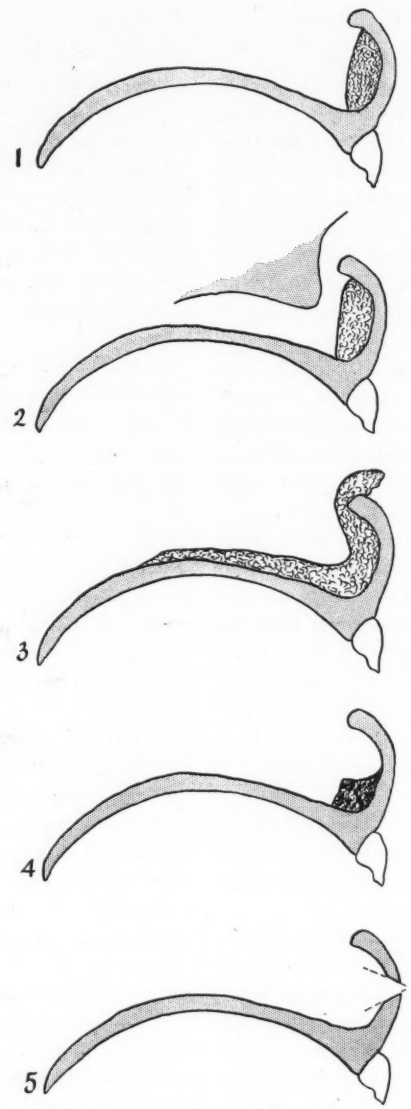
9. When satisfied that the mix is ready for insertion, if necessary, replace the mixture or mass in position in the denture.

Procedure for Insertion Of Denture

First Insertion—1. Insert the denture carefully, placing it in contact with the palatal area first.

2. Give the denture a gentle backward push and have the patient bite gently in occlusion. Remove the denture promptly.

3. If the patient comments about



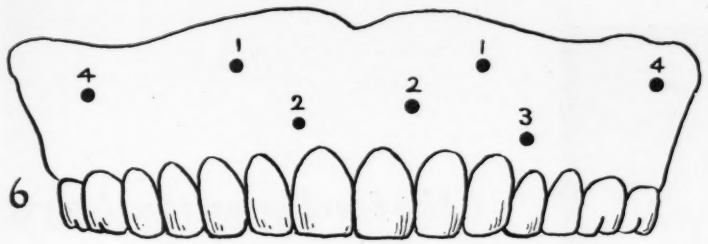
1. ***Showing the rebase material as it is placed in the denture for the first insertion.***

2. ***The relationship of the jaw and denture, with the material. This is described as the first insertion.***

3. ***Flow of rebasing material over flange and palatal area.***

4. ***Remove irregularities in denture base.***

5. ***Proper bevel of hole is shown.***



6. ***Position of holes and labial and buccal flanges are shown.***

irritation from the chemical content of the mixture before the first step is completed, remove the denture at once. If any material has adhered to the oral tissues, remove it immediately; the mix was too sticky. This difficulty will not occur if the procedure outlined has been carefully followed.

4. Return the denture to the cold water only long enough to give it a water bath. At this time check the direction of the flow of the material, the amount and the placement of the material on the palatal area.

5. If a large amount of material is noted on the palatal area while the labial and/or buccal areas are in need of material, force or scrape the needed amount from the palatal area and apply it where needed.

Second Insertion—1. After the material has been distributed and the denture has been immersed in water, reinsert it carefully and press it into position with slightly more force than was needed before.

2. Have the patient occlude and immediately press the denture into place.

3. Note the holes and the excess material coming through them. Press this excess material back into the denture while the patient maintains occlusion. This step must also be done quickly for prolonged contact with the tissue at this point will cause irritation.

4. Time is also a factor in the setting or hardening of the mixture as some material may still be retained in the palatal area. The case should not, therefore, be forced completely to place.

Denture Removed—1. On removal, the denture is again inserted in cold water. It is then quickly examined for distribution of the material and for any material which may have adhered to the palate.

2. All material adhering to the palate is removed. A useful instrument for this is a cup-shaped surgical curet that will cut and scoop the material at the exact place requiring removal.

3. The material should at this time appear smooth, indicating that sufficient bulk is present. Check the position of the bulk. Too much should not exude through the holes.

4. Examine the outer area. The holes should be filling (buttoning up). On the next insertion the excess that has come through the holes may be pressed carefully back into the denture.

Third Insertion—1. While the patient holds the jaws firmly in occlusion, the denture is pressed into place with force which will immediately muscle trim the areas.

2. Depending on the following factors this third insertion may be the final insertion: (1) If there is no material still remaining on the palate. (2) If the holes are properly filling. (3) If the material is distributed evenly.

Final Steps in Procedure

1. It is the author's method to repeat the water bath, the trimming, and replacing of the material, observing the palatal covering, and the filling up of the holes.

2. The denture is returned to the mouth and the patient tries a few biting movements. The denture is allowed to remain in the mouth until the patient comments that the chemical ingredients or the heat causes irritation.

3. When satisfied that no more improvement is attainable, the denture is placed in the cold water to harden.

Prevention of Warping—The denture must remain in water at this time to prevent warpage by overheating. Plastic in this stage will bleach in color if not protected with water or oil.

Completion of Technique—1. Allow twenty minutes for the case to harden in cold water. Remove the wax (not with a solvent) and examine for imperfections in the closing of the holes.

2. If the holes need filling, trim them as for a cavity preparation with a bur and undercut.

3. Apply the plastic with the brush method. While waiting for the repair spots to harden, insert in water again. Sand the bulk of excess material and finish the case after the entire mass is hardened.

1121 *Walnut Street*

Aberrant Salivary Gland Tumors

TUMORS in aberrant salivary gland tissue in the cheek may be cystic or solid adenomas. Usually, however, these are mixed tumors, about a third of which are malignant. They are characteristically small, nodular, painless, and slow-growing. Usually they are firm and freely movable and appear fixed to the surface, ordinarily in the midcheek region. They occur most often in young adults and cannot be positively diagnosed except by microscopic study. Such tumors must be differentiated from metastasis to the buccal lymph nodes or from parotid gland or parotid duct carcinomas. Excision is the preferred treatment.

From *The Cancer Bulletin* **8**:58 (May-June) 1956.

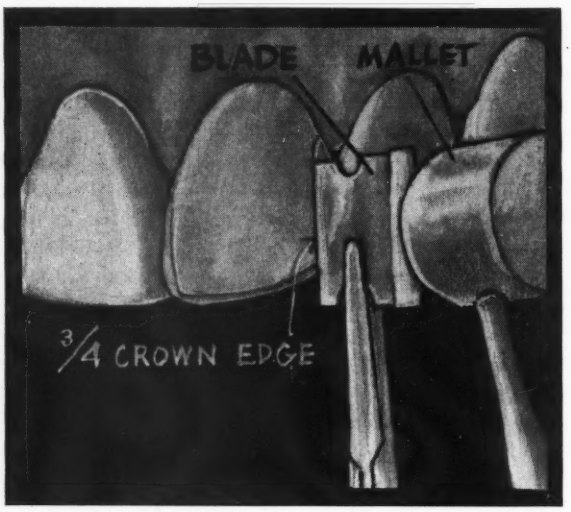
1

Clinical and Laborator

Heating Modeling Compound

Alfred Rechter, D.D.S., New Hyde Park, New York

1. For rapid heating and easy handling of modeling compound, wrap the individual cakes in aluminum foil and place in the sterilizer.

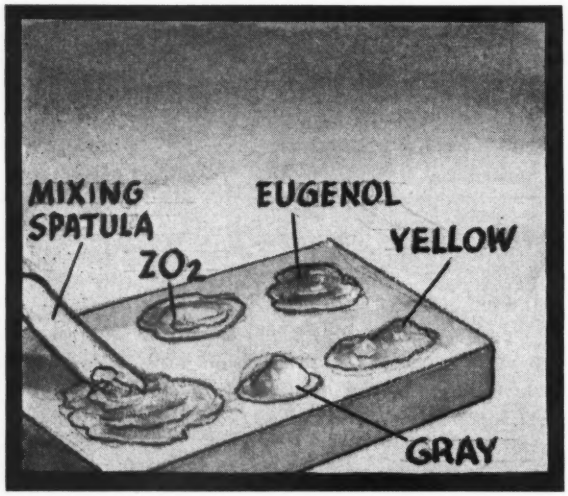


2

Removal of Three-Quarter Crowns

Robert W. Bauman, D.D.S., West Liberty, Iowa

2. Place a single-edged razor blade between the tooth and the casting in the gingival third of the restoration. Strike a light blow with a mallet. This will loosen the cement and allow the casting to be removed.



3

Maintaining Color in a Temporary Crown

Samuel Kassal, New York

3. The proper amount and shade of regular cement is incorporated with the zinc oxide-eugenol cement in the cementation of the temporary crown.

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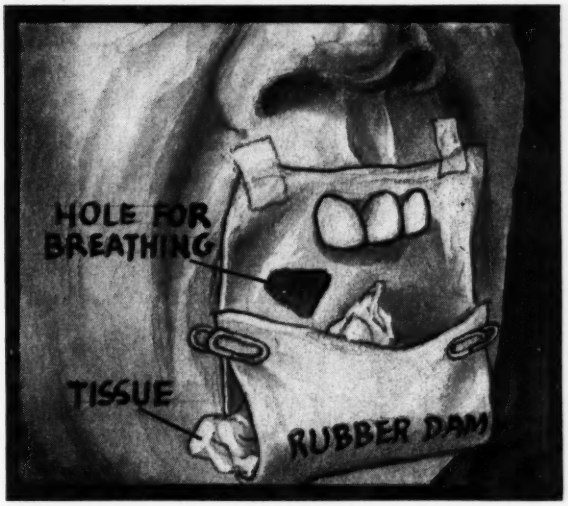
SUGGESTIONS . . .

Rubber Dam Technique

Richard R. Schneider, D.M.D., Boston

4. Cut the dam slightly longer and fold the bottom part to form a pocket. In this pocket place a piece of tissue. This will catch either solids or liquids. An air hole cut in the dam allows easier breathing.

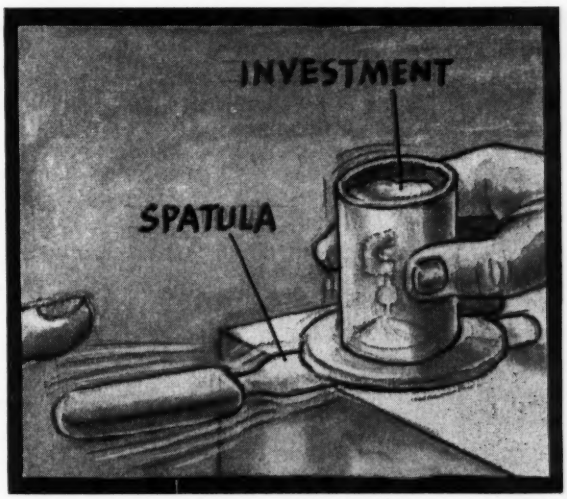


4

An Emergency Investing Vibrator

Victor L. Berthod, D.D.S., Vevey, Switzerland

5. A plastic spatula held on the laboratory top and placed under the inlay ring makes a satisfactory vibrator.

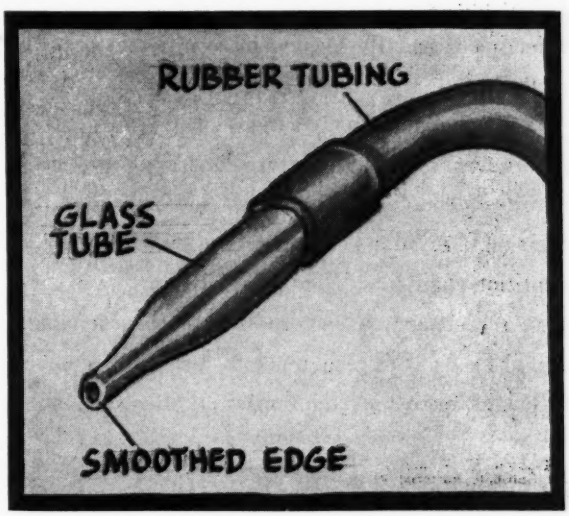


5

A Small Aspirator Tip

Donald D. Fleckenstein, D.D.S., Colby, Kansas

6. Select a piece of glass tubing and heat. When the glass melts, pull the tube apart. Break the tube at the smallest part and smooth the sharp edge with a dental stone.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 188 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S *Page*

IT HAS been known for twenty years at least that there was an association between extraction of teeth and subacute bacterial endocarditis (SBE). In the days before the antibiotics the death rate from this condition was 99 per cent. Penicillin has proved to be the therapeutic agent of effectiveness in present-day prevention and therapy.

Subacute bacterial endocarditis is most common in the age group between 15 and 40. It is infrequent among the edentulous.

Two British investigators[1] have recently reassessed the relationship between foci and SBE and have proposed an approach that may seem to be radical to dentists. It is, however, worthy of earnest consideration.

With respect to classification these British physicians suggest two categories of SBE:

"*Category A*—SBE due to *Streptococcus viridans* is generally less severe, its therapy rarely presents major problems, the immediate prognosis is more favorable, but the tendency to relapse is high. The teeth are commonly regarded as the most important focus of infection.

"*Category B*—SBE due to other organisms is more acute, presents therapeutic problems related to the organism concerned, carries a less favorable immediate prognosis, but is unlikely to relapse if the initial attack is successfully treated. The focus of infection is usually located in a site other than the teeth."

The approach that is suggested by these investigators working in the Oxford Hospitals may seem heroic indeed to many dentists who consider that their main mission is the preservation of the natural dentition at any cost. In cases of SBE falling in Category A that are caused by *Streptococcus viridans* and are subject to recurrence *all* teeth are removed following recovery from the initial attack.

Hobson and Juel-Jensen state their case in these words:

"So long as teeth remain in a jaw there is ever present an ideal mechanism for the infliction of minor trauma upon the alveolar bone or mucous membranes. Mastication, teeth-grinding, and particularly the major trauma associated with extraction of teeth will inevitably expose the patient to recurrent bacteremic showers. We believe that in recognition of the high relapse rate, the complete removal of all teeth should be carried out. If the gravity of the initial disease be accepted a relapse may be even more disastrous. Is it justifiable to evade the responsibility of advising such a patient to have all the teeth extracted under antibiotic cover because on clinical and radiologic evidence they appear to be 'good'?"

Before we arise too quickly to express condemnation for this approach we should recall that other competent investigators have described the transient bacteremia that often follows tooth removal. Even noncarious teeth with vital pulps may "inject" *Streptococcus viridans* into the blood stream by their movements in the alveolar sockets during mastication and teeth-grinding. In the presence of the localized sepsis found in periodontal pockets the possibility is particularly serious.

"It has been our practice freely to admit to hospital for dental extraction any patient with an acquired or congenital heart lesion to ensure that the hazard to which they must be exposed shall be minimal."

The suggestion to consider *all* persons with known congenital or acquired cardiac lesions as possible candidates for SBE following manipulations of dental tissues is a wise one. Such patients should be admitted to a hospital for even "minor" extractions and protected with an antibiotic "cover" against a bacteremic shower. This is another area of practice where the dentist and the physician must work together.

[1]Hobson, F. G., and Juel-Jensen, B. E.; Teeth, Streptococcus Viridans, and Subacute Bacterial Endocarditis, British, M. J. **5008**:1504 (Dec. 29) 1956.

MEDICINE and the Biologic Sciences

Carcinoma of the Lip

Good functional and cosmetic results can often be attained in the treatment of large cancers of the lip with cervical nodal involvements. In such cases, however, months of postirradiation pain and postoperative drool and prolonged economic loss ensue before the final result is satisfactory. Many of these penalties can be prevented by early recognition and elimination of precancerous lesions. Survival rates increase and there is a decrease in hospitalization and pain.

Two elements seem to be involved in the production of lip cancer: (1) the intrinsic factor is composed of changes in the structure and function of the lip covering, resulting in loss of the protective capacity against injuries. (2) Extrinsic factors including (a) chemical irritation, (b) carcinogens, (c) multiple trauma, and (d) ultraviolet light. If either factor is sufficiently strong, the other is not necessary. Persons exposed to intense sunlight are especially prone to lip cancer.

Lip cancers probably never originate in normal skin or mucous membrane, but rather begin multicentrically in worn-out tissue. Most lip carcinomas are actually scar cancers on a tissue base with a disturbed maturation pattern.

Early malignant degeneration is often difficult to detect. Duration of the lesion is of little value as a diagnostic aid. Microscopic examination of the entire area is necessary for accurate differentiation.

Delay in instituting proper therapy is promoted by emollients, estrogens, vitamins used for leukoplakia, keratosis, prolonged fever blisters, smoker's patches and chronic cracked lips. Cauterization or irradiation of precancerous lesions causes further scarring.

The lip shave is a simple operative technique which removes all premalignant tissue. A simple total excision of the exposed vermilion surface of the lip is performed. The mucosa is then advanced to the skin edge and

sutured with fine multiple stitches. A barely perceptible scar is left. Microscopic study of the entire area can be done. If no cancer is found, dangerous premalignant tissue has been removed and no other treatment is necessary.

If early cancer is found in the excised area, a V-shaped excision of the involved area is performed with subsequent plastic repair. Palpable lymph nodes are dissected.

Freeman, Bromley S.: Early Recognition and Surgical Treatment of Carcinoma of the Lip, Am. Surgeon **21**:962-968 *(October)* 1955.

Menopause—Psychologic Aspects

Women must face the fact of aging more abruptly than men. The problem is more difficult since society places a greater premium on beauty and youth for the female than for the male. Often the loss of the ability to reproduce is a severe psychologic stress which represents a blow to feminine self-esteem.

Many women react to the trauma of the menopause by a thrust of activity, in some instances, in the threatened area of reproduction. Women with satisfied reproductive desires turn to artistic or intellectual creation, church work, philanthropy, community activities, or physical outlets. Less stable judgment may lead to flirtations with younger men and adolescent behavior.

The ability of a woman to withstand the psychologic stress depends on past ability to accept and satisfy feminine drives, the capacity to establish rewarding relationships throughout life, and experience of the menopausal losses in a state of relative emotional security.

Women adapted to life's problems by neurotic devices repeat or maintain the same methods during the menopause. Some women withdraw from activity, deny reality and succumb to psychotic episodes. Preoccupation with inner feelings or bodily sensations is often reinforced by medical attitudes.

Histories of suggestible, anxious menopausal women reveal the following similar findings: (1) many symptoms cannot be explained by organic abnormalities, (2) symptoms and details of onset vary from visit to visit, and (3) similar symptoms antedate the menopause by many years. A high degree of suggestibility is shown in these patients by affirmative answers to a large number of specific symptoms asked about previously. It has been estimated that in nearly one half of these patients the symptoms are classified as entirely hypochondriac.

Donovan, John C.: Psychologic Aspects of the Menopause, Obst. & Gynec. Surv. **6**:379-384 *(October)* 1955.

Natural Radioactivity

Altitude, latitude, and background materials determine the amounts of atomic radiation to which a person is exposed from natural radioactivity in the earth and in the human body.

To estimate quantities from the natural radioactivity in the earth, the

energy absorbed per gram by a human body on the earth's surface is considered about the same as that absorbed per gram by the top layers of rock from gamma rays emitted by rock. That is, the gamma-ray energy produced from thorium, uranium and potassium in a gram of granite is assumed to equal that entering a gram of human tissue, with correction for geometric loss.

Surface amounts fall as height above ground increases. This is due to air absorption. A 50 per cent reduction occurs with every 370 feet. At sea level, the body receives 143 milliroentgens per year from ordinary granite on the equator. At 55 degrees north latitude the amount is 147 milliroentgens.

Sedimentary rock subjects men to less energy; 7 milliroentgens per year at the equator. Sailors at the equator on the open sea receive 53 milliroentgens, including rays from potassium and uranium.

Cosmic rays consist of high-energy particles rather than of gamma rays and may have greater biologic effect per unit. From 33 to 37 milliroentgens per year are absorbed at sea level, 80 to 120 milliroentgens at 10,000 feet altitude and 300 to 450 milliroentgens at 20,000 feet.

Radioactivity in the human body is derived from potassium, carbon, and radium in the bones. Potassium contributes 19 milliroentgens per year, carbon 1.5 milliroentgens. In a packed crowd, rays from potassium of neighbors enter at the rate of 2 milliroentgens per year.

Many types of exposure occur in ordinary pursuits. From a wrist watch with luminous dial, 40 milliroentgens per year enter the central part of the body, including sex organs. An airplane cabin pilot flying twenty-four hours a day would receive 1,300 milliroentgens per year from the dials on the panel.

Radiographic study exposes the patient to varying quantities of energy. When an anterior-posterior film of the lumbar spine is made, 1,500 milliroentgens per year is emitted. The value is 9,000 for a lateral film of pregnancy.

Fallout from atomic tests on January 1, 1955 was about 1 milliroentgen per year. The total amount for 1954 was about 15 milliroentgens largely from Pacific tests in the spring. When bombs are fired, radiation may approach or exceed the natural rate for a few days. In a few weeks decay and weathering processes lower values to small fractions of the natural background.

Libby, W. F.: Natural Radioactivity, Science **122**:57-58 (*July*) 1955.

Food Poisoning

In general, food poisoning includes illnesses due to preformed toxins that may cause acute gastrointestinal symptoms or acute disturbances of the central nervous system (these may be of bacterial origin or may be normal constituents of plants or animals, such as toadstools or various poisonous fishes eaten in the belief that they are foods) food infections such as salmonellosis, poisoning due to chemicals accidentally introduced into foods, and food allergies.

It is felt that this classification has little practical value now. The fact remains, however, that when several persons have sudden attacks of vomiting, abdominal pains and diarrhea, until a specific diagnosis is made the clinician has only the term food poisoning to use as a working diagnosis. In 1951 food poisoning was a reportable disease in 30 states.

Most outbreaks of food poisoning occur outside the home and are traced to restaurants, caterers, church suppers, or food prepared for picnics several hours before eating. Some occur in the home and may be traced to a single bakery or other purveyor of prepared food for delivery. Formerly it was believed that the commonest source of this type of food poisoning was an infected cut or whitlow on the hand of a food handler or an infected udder on a cow. Now it is evident that transfer of micrococci from the nose, with the organism entering food directly through dripping or sneezing or indirectly from the hands after blowing or otherwise touching the nose, is the usual mode of contaminating food, especially if the food handler has a cold.

Food poisoning may occur at any time of the year, but it is somewhat more prevalent in the winter than in the summer. Even if food becomes heavily contaminated, no food poisoning will occur unless the organism is allowed to incubate for several hours at room temperature or higher. Unfortunately, placing the food in a refrigerator or cooking it in a large container will not inhibit the incubation of the organisms in the central portion for a matter of hours. Cooking may actually increase this growth. For this reason flat containers not more than 4 inches deep are recommended, especially for storing food in a refrigerator.

Micrococcic food poisoning is most commonly traced to ham, chicken salad, the filling of pies and layer cakes, and various milk products. Pasteurization does not prevent the development of micrococcus pyogens in products that are handled carelessly after pasteurization. The incubation period of the attack is usually about 2½ hours, but may be 30 minutes or 6 hours. Although the attack may cause extreme prostration, recovery in one to five days is the rule. The treatment is symptomatic.

Editorial: *Food Poisoning, JAMA* **160**:291-292 (*January* 28) 1956.

Coronary Occlusion— Treatment

Improved methods of diagnosis and treatment have lowered the mortality rates of acute coronary occlusion. Improved electrocardiograms have disclosed cases previously undiagnosed.

Following an attack, pain should be relieved as soon as possible. With severe discomfort, 8 to 10 milligrams of morphine are given intravenously. Nitroglycerin is ineffective or even harmful. If the patient's condition is serious, hospitalization is recommended. Home environment is unsuitable and usually nurses are not available. Some patients, however, can be treated satisfactorily at home.

Anticoagulants are advisable for

Slightly Controversial

December, 1907 was a fateful time. In that month the Wright brothers proved that man could fly. They proved that man could build a machine that could sustain him in flight. Since that date progress in aviation continued at a rapid rate. Progress continued despite extremely grave consequences. Were the Wright brothers responsible for the many deaths that followed?

Deaths even ocurred from the planes they built. Deaths have occurred ever since. Have the Wright brothers been condemned? No. Their vision, determination and courage, despite the long list of fatalities has been a constant inspiration to the world.

Another factor is worth mentioning. Did they risk their necks and money for glory? The Wright brothers formed a company for manufacturing their machine. Government contracts were sought, and rightly so. Have they been condemned for trying to capitalize on their work? The answer again is no!

So it goes with all progress, whether the project is small or large, whether it is trivial or momentous. For instance, the event of plastics in dentistry might be cited. From a visionary beginning they now dominate certain fields and are encroaching on others. You cannot compare present day planes with the original crates. Nor is it fair to compare present day P.F. 57 and PEARLon 57 with the original product. P.F. 57 and PEARLon 57 are actually new materials.

They are both mineral plastics, not acrylics. They are both color stable due to the elimination of the discoloring catalyst in the powder. They are both insoluble in mouth fluids and will never wash out as do the synthetics. They are both tenacious and require minimum undercutting for their retention. They are both slightly expansive upon setting, insuring perfect margins. They are both fluorescent. They both contain molectite, which makes them wear far longer than an ordinary acrylic.

P.F. contains a greater amount of molectite which makes it more opaque and best for all posterior fillings requiring esthetics. PEARLon contains enough molectite to insure its wear resistance on all anterior fillings without decreasing its translucence. Both are made for their particular purpose. They are superior many times over to any synthetic or cement in existence, on every count.

What is required in a good anterior filling material? 1. It should have tooth matching characteristics. 2. It should be insoluble in mouth fluids, food and drink. 3. It should be hard enough to withstand the abrasion of brushing and incision. 4. Its margins should remain impervious during the temperature changes incident to the mouth. 5. It should be able to be handled with average ability. 6. It should set hard within limits of patient tolerance and be able to be finished at the same sitting. 7. It should have no harmful permanent effects on the pulp. 8. It should have permanent stability of form. 9. It should have permanent color stability. 10. It should be completely stain resistant.

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If you have been a user of P.F. or/and PEARLon in the past and have stopped for some reason, we urge you to send us direct your remaining bottles of powder, for exchange on new P.F. or PEARLon 57. If you have not as yet availed yourself of the advantages of P.F. or PEARLon, we urge you to order the combination kit (Clinic Special) from your dealer. If you are still on the fence, send us $1.00 for a generous sample, $2.00 for both.

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congestive failure or shock, for phlebitis, and after pulmonary or arterial embolism with the execption of cerebral embolism. Old age or pulmonary edema does not preclude the use of anticoagulants. These agents are usually not necessary for slight attacks.

When anticoagulants are employed, 50 to 75 milligrams of heparin are given intravenously every four to six hours for the first day or two. Oral therapy with dicumarol, tromexan, or hedulin is instituted simultaneously. The initial dose of dicumarol is 300 milligrams with 100 to 200 milligrams the second day and smaller subsequent doses depending upon the prothrombin time. Anticoagulant therapy is continued until one week after the patient is ambulatory or longer if pulmonary embolism or phlebitis has occurred.

Careful supervision of anticoagulant therapy is essential. The urine, skin, and serous cavities should be watched for signs of bleeding. Anticoagulants are not recommended for patients with nonspecific pericarditis, bleeding tendencies, ulcerative colitis, peptic ulcer, renal or hepatic disease, or previous cerebral vascular accident.

Prolonged bed rest is not advised for all patients. This aspect of management must be individualized. Usually about one week of bed rest with subsequent armchair rest is adequate. Symptoms of left ventricular failure may be improved by removing the patient to a chair. Use of a bedside commode is helpful.

Patients with slight attacks may walk by the beginning of the third week. Return to work is feasible in two to three months after slight occlusions and three to six months after more severe attacks. Four-fifths of patients are able to resume former employment. The electrocardiogram is not invariably used as a criterion of progress.

The diet is restricted to 800 to 1,200 calories initially. Fruit juices, cold milk and spicy foods are avoided if nausea and vomiting occur. Constipation and distension may be prevented by cathartics and by small enemas every two or three days while the patient is in bed.

Master, Arthur M., and Jaffe, Harry L.: Treatment of Acute Coronary Occlusion, New York J. M. **55** :3239—3249 (*October*) 1955.

Disposition of Cancer in Groups Determined by Occupation

SIGISMUND PELLER, M.D.

Summary

(1) Of all physicians who died, 1.2 per cent succumbed to leukemia, 12.4 per cent to other cancers, and 13.5 per cent to all malignancies. For the age group 35-74 years, the corresponding ratios are: 1.25, 12.5 and 13.7 per cent.

(2) Within the total of deaths, the ratio of leukemia in physicians is more than twice that in all white males above the age of 24 years, whereas the ratio of all other cancers is diminished.

(3) Within the total of fatal cancers, the ratio of leukemia is almost 10 per cent, that is, three to four times more than expected on the basis of mortality statistics for white males, United States, 1948.

(4) The increase in the proportion of leukemia to all deaths is more pronounced in young physicians than in middle-aged and older ones.

(5) The diminished ratio of all nonleukemic cancers does not apply to physicians under the age of 35; in the age groups 25-34, the ratios are even increased.

(6) Physicians have at the age of 40-74 a highly increased mortality from leukemia, a diminished mortality from all other cancers, and a reduced total cancer mortality. Mortality for physicians younger than 35 and older than 74 was not computed.

(7) The high increase of leukemia in physicians of all age groups and the excess in all other cancers during the first fifteen years of practice is only to some extent accounted for by the exposure of radiologists and dermatologists, and is chiefly due to the routine fluoroscopic work of a great many diagnosticians and practitioners.

(8) In a number of cases, the latency period of x-ray cancers, whether leukemic or not, is shorter than five years.

(9) On account of the increasing use of fluoroscopy by general practitioners, their leukemia ratios and rates are bound to rise, whereas the values calculated for radiologists probably will remain as they are.

The observations on leukemia in radiologists and physicians have their counterpart in experiments on mice. Some researchers have assumed that x-rays speed up the manifestation of leukemia in mice which otherwise would have died from other causes before the disease would have appeared.

From *Cancer in Man*, New York, International Universities Press, Inc., 1952, pp. 199-200.

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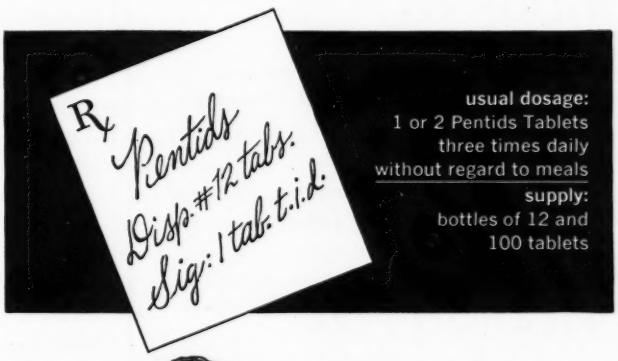

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In Convention Assembled

Many of our colleagues are "living high off the hog" these days. They are flitting around in Cadillacs and their wives are covered with fancy fur arrangements. These dentists are among the frequent patrons of the airlines and trips here and there about the world are commonplace.

When a group of dentists assemble at a large dental meeting and the spirits are lifted with other kinds of spirits the talk often runs into terms of big money. No longer do patients seem to need the simple services such as periodic prophylaxis and operative dentistry. Most every patient seems to to be begging for full mouth reconstruction and a four-figure fee for dentures is no surprise at all. Periodontal surgery, for areas little or big, of gingival inflammation is often the treatment of choice, because flashing scalpels or blood-letting are good for a princely fee.

How well the grandiose fees, that are tossed around at dental meetings, equate with the figures supplied to the Bureau of Internal Revenue I have no way of knowing. I suspect that there are some disparities.

We can, however, be sure that one group of figures is generously supplied: the deductions for convention expenses. This, I understand, is a common form of accounting among most taxpayers. Should there be any suspicion on the part of a tax auditor to question the high-living standards of dentists in convention assembled, the taxpayer need only show the prevailing scale of prices among hotels.

The tariff on a simple bedroom in a convention hotel may be $20 a day. For the dentist who wishes to impress, a fancy suite that is necessary for entertainment purposes may rent for $75 to $100 a day. A cocktail with a skinny ounce of mysterious whiskey sells for 75 cents to a dollar. A hamburger with a glorified French name with soggy potatoes of the same nationality and an emaciated salad brings $3.15 in one hotel that I know. A dinner-dance with indifferent cuisine costs $8 to $10 a person, with drinks extra. A testimonial dinner, where one's presence is necessary for professional prestige, may be as much as $25 a plate.

From this scale of current prices it is not hard for any suspicious tax auditor to see how living expenses for a dentist may run $50 a day at a convention. If I recall, government employes are allowed $10 a day for their expenses, which might make the auditor a bit skeptical of the high-living standards of a dentist.

Now all these figures are picayune when we think of the yachts, the country lodges, the planes, the cabanas, the hotel suites, the fleets of automobiles that are charged off by corporations as deductible items of expense. The dentist, living high for less than a week at a meeting, is a poor piker compared to the corporation executive who may be living it up for most of the year at Uncle's expense.

Not all dentists are living in the luxury class. There are many who can never afford to travel far to a dental meeting. These chaps are required to stay home and care for the dental needs of the ordinary people who cannot pay the fancy fees. Many of these dentists, even in these inflated times, do not have a net income of $8,000 a year. By necessity they live modestly and are lucky to have a two-week vacation a year.

Some of the Cadillac-sable crowd are not as solvent as they appear to be from their affluent living at the big convention. Back home they may be heavily in hock to the mortgage banker and deficient of cash in the bank. If some of these dentists were to become disabled or die too soon many families would not have enough insurance to carry on in modest fashion to say not a word about living in luxury. Dentists, of course, are not the only people who live beyond their means. Living too high is a rather common mirage.

Before any dentist sets too rich a standard for himself he might well take a look at his financial prospects as compared to those of a business executive *who seems to be* in the same income bracket.

The dentist must buy his own insurance, provide for his own retirement income, and face up to the fact that his earnings from his profession are likely to decline after he passes

his fifty-fifth birthday. The business executive is protected by insurance paid out of corporate earnings. If he works for an enlightened corporation he is protected under a pension trust fund that is a deductible corporation expense. If the corporation is large and the executive competent he may expect an advancement to an executive position where a salary high in the five-figure bracket is not unusual.

The dentist also pays for his own vacations and meets the cost of illness and possible disability out of his own earnings. If he is protected under hospital and medical benefit insurance programs he pays the premiums himself. The only fringe benefits the dentist receives, he buys himself — after taxes.

Nor is there any spectacular "unearned increment," to use an economist's term, that will hold a prospect for sudden wealth for the dentist; no company stock that will increase in worth, no quick profits from new products and new markets, no fabulous windfalls.

Nor is there the opportunity, within the framework of professional ethics, for the dentist to use other people to make money for him. The associates of the dentist in his practice (the hygienist, the laboratory technician, the assistant) make his work easier and somewhat more profitable, but they cannot produce independently from the direct supervision of the dentist. The business man can have dozens or thousands of people working for him to make a profit. The dentist must be present in the flesh to make money. When he is *in absentia* his income stops and his ancillary personnel can do nothing legally to maintain production schedule. The business man can be whooping it up outside his office and still maintain an income.

A friend of mine insists that it is impossible to determine the real status of the earnings of a dentist *from his practice* by observing how he lives. The mansion, the big automobiles and even yachts, the vacations in far-away places may be paid for by money from other sources. Some dentists marry rich women or inherit money. Others have received inside information on the stock market. Some have bought farms, vacant city property, oil wells that have paid off handsomely. A few have other business interests that have been extremely successful. More power and good fortune to them! It is quite safe to observe that no dentist can live like a millionaire from his earnings in practice if he is meeting his obligations and is planning for the future.

No one should begrudge the dentist his splurge of affluence if he likes to live it up to impress his colleagues and inflate his ego during a dental meeting. An occasional binge on caviar and champagne may upset a plebeian gastrointestinal tract but it may help elevate the spirit and the morale. It is good for everyone to live once in a while like members of the Royal Court. The danger threatens when a dentist (or anybody) sets his everyday standards of living so high that he must kill himself to keep up with the bills.—E.J.R.

Symptoms of the Principal Deficiency Diseases

Ariboflavinosis

Eyes—Cornea: superficial keratitis, circumcorneal vasodilation and congestion, proliferation of limbic plexus, opacity. Symptoms: Photophobia, lacrimation, burning, itching, irritation, visual fatigue, dimness of vision. Palpebrae: blepharitis.

Lips—Cheilosis, angular stomatitis, perleche, labial and angular fissures, crusting, ulceration, atrophy.

Skin — Dermatitis: dyssebacea in nasolabial folds, chin, and malar prominences.

Tongue—Glossitis, magenta color.

Aniacinosis (Pellagra)

Mouth—Stomatitis, Tongue: glossitis, redness, soreness, hypertrophy, atrophy, ulceration. Symptoms: Soreness, burning.

Gastrointestinal Tract — Gastroenteritis; indigestion; burning in stomach; anorexia; diarrhea, followed by constipation.

Skin — Erythema, vesicles, bullae, cracking, exudation, ulceration, crusting, atrophy and pigmentation of exposed surfaces. Lesions appear most frequently on the dorsum of the hands, feet, and forearms, with bilateral symmetry, and neck.

Psyche — Irritability, inability to concentrate, lack of interest, depression, delirium, and dementia.

Avitaminosis C (Scurvy)

Gums — Gingivitis, redness, soreness, tenderness, bleeding, infection, ulceration, atrophy.

Teeth—Loosening.

Vascular System—Cutaneous petechiae: ecchymoses, intramuscular or subperiosteal hemorrhage; thigh of infant swollen and tender from subperiosteal hemorrhage and, later, hard and less tender; legs swollen and tender from intramuscular hemorrhage.

Skeleton — Beading of the ribs (scorbutic rosary), separation of epiphyses.

Avitaminosis A (Xerophthalmia)

Eyes — Conjunctivae: thickening, increased vascularization, translucency, opacity. Cornea: opacity, ulceration, keratomalacia, hypopyon, prolapsus, loss of bulbar contents. Symptom: nyctalopia.

Skin—Xerosis, dermatosis, papular eruption on anterolateral surface of arms and thighs, follicular hyperkeratosis.

Avitaminosis B_1 (Athiaminosis, Beriberi, Polyneuritis, Polyneuropathy)

Nervous System—Peripheral neuritis ascending from lower to upper extremities. Reflexes: Patellar tendon reflexes exaggerated, diminished, or lost. Deep reflexes diminished or lost. Motor: Degeneration and paralysis of nerve with atrophy and weakness of muscle affecting feet, calves, legs, and hands; heaviness of legs; increasing inability and indisposition to walk; muscular weakness and stiffness of the legs leading to altered gait; contrac-

tions, particularly in calves; painful cramps; tonic convulsions.

Sensory—Hyperesthesia, as muscle atrophy, the calves and, later, forearms become painful when squeezed, then exceedingly tender to touch. Painful cramps.

Paresthesia: burning and tingling, most frequently in the legs.

Hypesthesia: impaired cutaneous sensations; anesthesia to tactile stimuli; perception of heat, cold, and painful stimulation also diminished in anesthetic areas; impairment spreads from tibiae over legs and calves to feet, arms and fingers.

Heart—Pain or oppression of epigastrium, dyspnea, palpitation of the heart, enlargement of the right heart.

Calcium-Phosphorus Imbalance with Deficiency of Vitamin D (Rickets)

Skeleton—Alterations and deformities.

Head: Craniotabes, bosses.

Thorax: enlargement of the costochondral junctions producing beading of the ribs (rachitic rosary). Harrison's groove along insertion of diaphragm.

Arms: enlargement of lower radius and ulna.

Spine: kyphosis in thoracic region, scoliosis.

Legs: thin, atrophic, bowed; knock-knees.

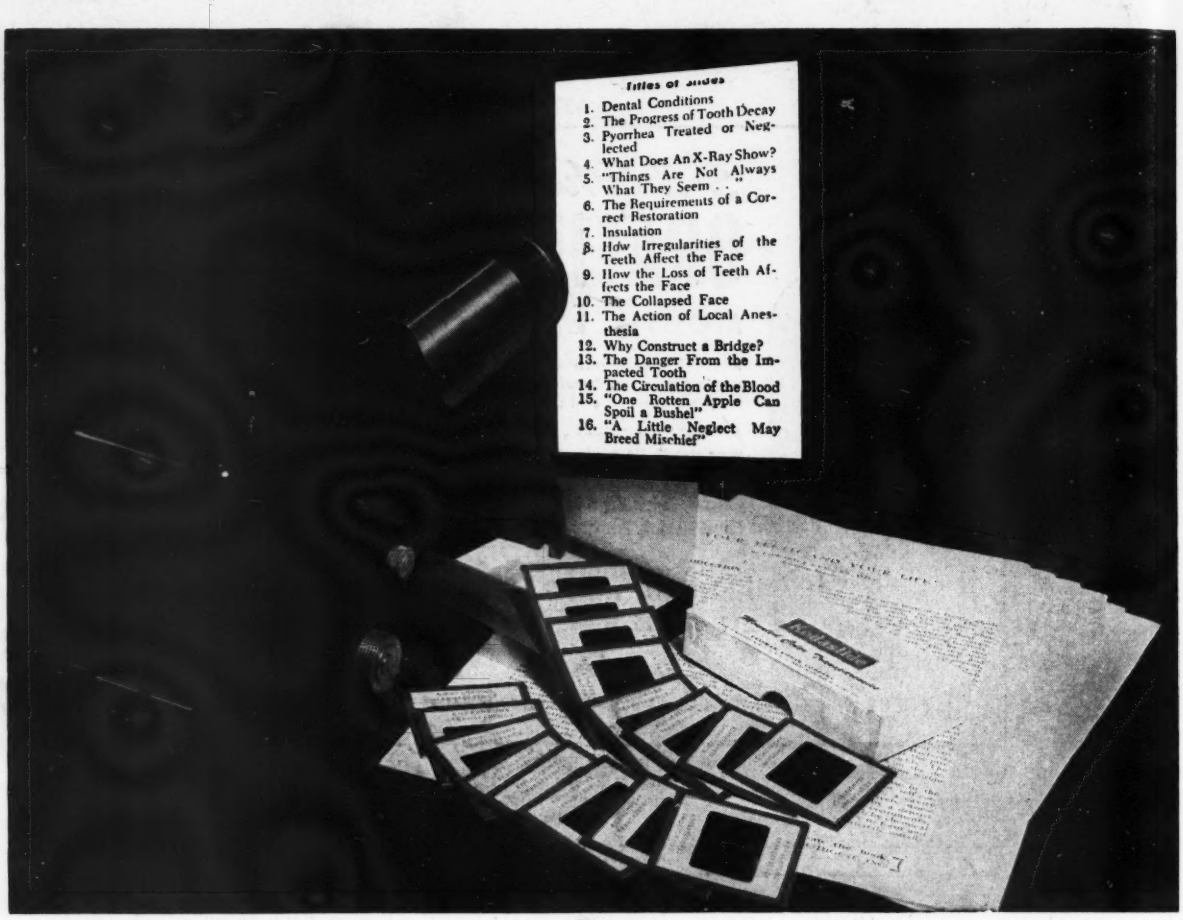
Pelvis: small and disproportionate.

From *Modern Medicine* **24**:80 (December 1) 1956.

Intravenous Nembutal Sodium With Procaine

THE USE of Nembutal® Sodium intravenously with procaine hydrochloride locally in oral surgery is reported. This combination was found especially valuable when general anesthesia was indicated and in apprehensive nervous patients to provide amnesia. A short recovery period was also an advantage. A case is reported in which full dental extraction of 24 teeth was accomplished in the author's office in a 43-year-old patient who "feared the needle." The patient was seated in the dental chair and assured she would not be asleep. Slow intravenous injection of Nembutal, 50 milligrams (¾ grain) per cubic centimeter, was started while a normal conversation was maintained with the patient. Injection was made slowly and cautiously and discontinued when the patient's response became incoherent and mumbling. In this case a total of 3¾ grains was given (5 cubic centimeters of Nembutal). The necessary local injections of procaine were then given and, after an appropriate interval of time, the teeth were extracted, the patient being able to follow directions and cooperate, with no nervousness or pain. After a 15-minute recovery period the patient was sufficiently alert to return home, accompanied by a responsible person.

From *What's New* No. **194**:23 (Spring) 1956.



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The Nutritional Significance of the Carbohydrates

Summary

Carbohydrate makes up the bulk of man's energy supply. It need not be considered a dietary essential since the metabolic machinery can synthesize carbohydrate from protein. This, of course, is an expensive procedure. The small but vital stores of carbohydrate serve as a ready source of energy for emergency purposes.

Metabolic Agent—Glucose is the key metabolic carbohydrate. It can be stored to a limited degree in the form of glycogen; oxidized to carbon dioxide and water with the liberation of energy; or converted into fat which serves as a reserve source of energy. In addition glucose is the essential energy-yielding metabolite for nervous tissue. All of the other hexose yielding carbohydrates are ultimately converted to glucose via the processes of digestion, absorption or metabolism.

Special Functions of Some Carbohydrates—Certain of the carbohydrates, such as lactose and fructose, have interesting special functions under particular circumstances. Sweetness and palatability is given to food by many of the sugars, and complex sugars form important substances in the structure of the body.

Elements in a Balanced Diet—A diet which supplies a level of protein to cover the needs of growth and repair of body tissues; a fat intake which provides the essential fatty acids and a solvent for the fat soluble vitamins; an adequate intake of vitamins and minerals; and enough carbohydrate to supply the remainder of the required calories seems both a practical and economical diet. One would expect the individual to flourish on such a regimen without becoming obese—the goal of good nutrition.

Adapted from *Borden's Review of Nutrition Research* **16**:97 (*November-December*) 1955.

approach to anesthesia can be abused. Better results may be expected if the anesthetist has the background, experience, and training needed to evaluate patients and their reactions and to select appropriate drugs and techinques. Abuses are flagrant in those circumstances in which the anesthetist adopts an indifferent and careless attitude and neglects or ignores minimal but significant change in the patient or in the operative situation. There can be little defense also for those who find life and work less exacting if they operate by routine. An important factor in the successful application of anesthesia is the constant awareness that no two patients and no two operations are exactly alike.

From Editorials, *Surgery, Gynecology & Obstetrics* **104**:114 (*January*) 1957.

Dental Examinations of Recruits

ROBERT W. HOBSON, Lieut. Col., (DC) USA

Summary

An examination of 8,139 recruits from all six Army Areas was conducted in order to determine the dental status of this group of young men. During a two-month period every third recruit reporting to the dental clinic was examined, and the results were recorded on a standard form.

For the average recruit, 4.8 restorations involving 7.2 surfaces were needed. One out of every four needed a defective filling replaced, and one out of every four was in need of a bridge. The average recruit was missing 3.93 teeth with 0.8 extractions indicated. This did not include extractions needed for the construction of prosthetic appliances or where it was found impossible to render restorative treatment. For each 100 recruits, 19 dentures of all types were needed. Twenty-two per cent of all patients examined had some degree of periodontal involvement, and 45 per cent were in need of a prophylaxis.

A review of the literature indicates that a caries expectant rate for each individual of 1.5 new lesions per year would be a conservative estimate. Coupled with the need for dental treatment observed in the average recruit, this means that during his two-year period in the Army, the average young man of draft age would require the insertion of a total of 7.8 restorations to discharge him in a caries-free condition.

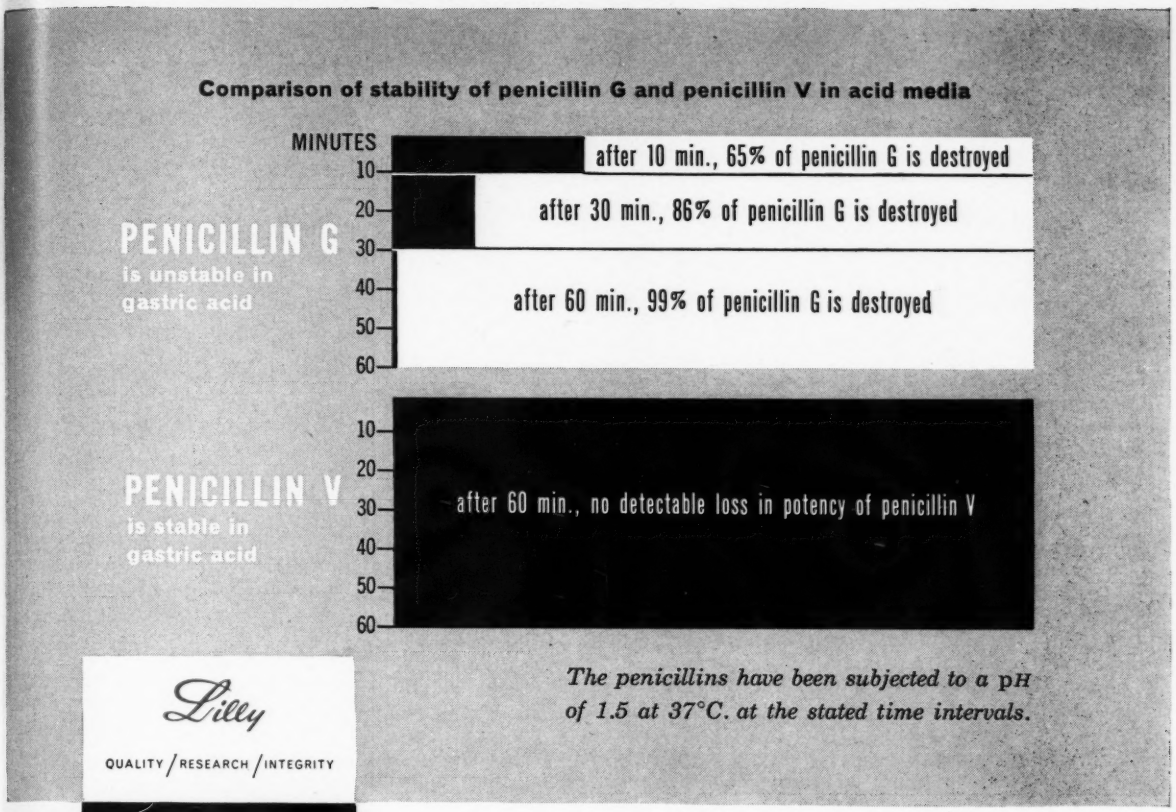
From *United States Armed Forces Medical Journal* **7**:1655 (November) 1956.

Polypharmacy in Anesthesia

STUART C. CULLEN, M.D.,
Iowa City, Iowa

Complex Process

The safe application of anesthetic agents either singly or in combination is dependent more upon the knowledge and clinical facility of the anesthetist than upon the drugs per se. Either the single or multiple drug



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CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 170 *and* 171)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.
$10 will be paid on publication for each suggestion that is used.

Avoiding Complications in Oral Surgery

JAMES R. HAYWARD, D.D.S., M.S.

THE FOLLOWING is a summary of routine measures which will aid in avoiding complications in oral surgery:

1) Take a complete history.

2) Make a thorough examination of all oral tissues, hard and soft.

3) Secure adequate x-rays for the procedure to be undertaken.

4) Have necessary laboratory studies done as indicated by the history.

5) Use good judgment in interpreting the information obtained through the history, examination, x-ray, and laboratory studies, and in this way prepare a treatment plan.

6) Prepare the patient for the procedure by explaining to him what is necessary and what will be be done and what he may expect as a postoperative course.

7) Select the proper premedication for the patient if it is necessary.

8) Select the proper anesthetic for the patient.

9) Be sure that there is excellent vision of the operating field at all times.

10) Use controlled force. Do not hesitate to section a tooth or relieve bone if it cannot be simply removed.

11) Be sure of proper closure. This means inspecting the area of operation for fragments of tooth or bone, trimming of excess tissue, and adequate suturing.

12) Give the patient both verbal and written instructions concerning postoperative care, and observe the clinical course closely in difficult cases.

Adapted from *Journal of the Canadian Dental Association* **22**: 222 (April) 1956.